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ABSTRACT

The purpose of this study was to develop, implement, and evaluate an objective approach to supervising elementary school student teachers, utilizing observational instruments and following an interaction analysis format. The primary instrument used was the Instrument for the Analysis of Science Teaching. The focus of the instruments and format for the model was to operationally define strategies that were believed to be important to the success of student teachers. Data were subjected to a Multivariate Analysis of Variance. This research attempted to better define the role of the supervisor and to develop a supervisor training program in order to promote professional growth in the student teachers. Results indicated that the success of this program did not appear to be significantly better than the one currently in use. (Author/M)

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THE DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF AN ELEMENTARY STUDENT TEACHER SUPERVISION PROGRAM UTILIZING AN INTERACTION ANALYSIS FORMAT

by

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Submitted to the Department of Curriculum and Instruction and the Faculty of the Graduate School of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Education.

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CHAPTER I

Introduction to the Problem

The student teaching experience is, perhaps, the most important aspect in the preparation of students entering the field of education. For most preservice teachers it is the first opportunity to enter a classroom and assume the major responsibility of educating children. Prior to student teaching there may have been limited exposure to children, e.g., student aiding, camp counseling, or others, but when student teaching begins, they are crossing the bridge from student to teacher. Therefore, it is extremely important that this experience be the best possible for preparing them to become full time teachers, a step many will take the following year.

Student teachers are supervised in a variety of ways, but for the most part they are under the supervision of a cooperating teacher and university supervisor. The relative roles of these two supervisory personnel are a topic of much debate. There is one view which suggests that the cooperating teacher should assume primary responsibility, since it is with the cooperating teacher that the student teacher works every day during the student teaching experience (Johnson, 1974; Dean, 1971). This position is gaining much support as school districts are proposing the development of teacher centers as the primary means for training future teachers. These centers would be run by district personnel and would provide preservice and inservice teacher training programs to meet the specific needs of districts. This could potentially remove all of the responsibility for teacher training from the university and place it in the districts' domain.

Another view is that the university supervisor should retain the primary responsibility for the supervision of the student teachers. One reason advanced is that the university must assume the ultimate responsibility for the evaluation of the student teacher (Neal, Kraft, and Knacht, 1967). Another reason is that cooperating teachers are selected to serve in that role without having any training in the supervision of student teachers. Dixon and Seiferth (1974) suggested that not only are better screening procedures needed for selecting those teachers who will assume supervisory responsibilities, but specific training programs should be designed and implemented for those teachers selected to insure adequate supervision for their student teachers.

This author supports the view that both the university supervisor and cooperating teacher have unique roles to assume in the supervision of student teachers. District personnel and university teacher education departments should jointly assume the responsibility for selecting cooperating teachers and developing training programs for those teachers selected to assume student teacher supervision responsibilities. University supervisors should be useful as resource people, for updating training programs, and for dealing with problems that may develop in individual situations. However, what types of programs exist now for training cooperating teachers? What type of supervision works best? These questions, and others, were addressed in this study.

Evaluation is an important dimension of any program, but it is especially critical in the case of student teaching. Evaluation of the formative type is necessary so that the student teacher can know how well he or she is performing and to make adjustments and/or changes where necessary in order to improve performance and impact on the children. Summative evaluation is important so that the student teacher can know, overall, how well he or she performed and so that school districts can have valid and reliable information for hiring new teachers. These methods of evaluation are usually based on a variety of feedback mechanisms through which student, cooperating teacher, and the university all gain information concerning the student teacher's performance.

The literature has provided descriptions of many different types of feedback given to the student teacher during the preservice training to aid the student in the development of teaching skills and to help improve classroom performance during the sixteen week student teaching period. Methods such as peer, student, cooperating teacher, and college supervisor feedback, each employing such technological achievements as videotapes, audiotapes, and many instruments designed to provide analysis of various types of interactions that take place in the classroom, have been developed to improve the student teacher's performance. However, the literature is contradictory concerning the effectiveness of different modes of feedback for improving classroom performance.

In general, there must be a summative evaluation made in order to determine the grade the student teacher receives. This summative evaluation usually consists of filling out a final evaluation form, written reports by the cooperating teacher, the college supervisor, perhaps an administrator, and perhaps even the students. However, how does this evaluation help the preservice teacher during the period of teaching? Moreover, what is the meaning of the final grade concerning the amount and types of change the student teacher made during the semester?

Problem

Based upon the previous discussion, there does seem to be a variety of procedures used for selecting cooperating teachers and in student teacher supervision training programs. While screening and selection of cooperating teachers is an important issue, the second dimension, i.e., the student teacher supervision training programs, was dealt with in this study.

Too often, when cooperating teachers are selected to supervise student teachers, there is no training program, either within the district or at the university level, to instruct them in how to supervise the student, and when supervision courses do exist, the cooperating teachers do not enroll. They are left up to their own means and as a result may require the student to model their own classroom behavior. Unfortunately, even when college supervisors are employed, they, too, are not required to partake in any formal training in supervising student teachers, but are merely instructed to fill out standard evaluation forms and make a specified number of classroom visitations, with the objectivity of their evaluation left up to the individual supervisor.

The purpose of the present study was to develop, implement, and evaluate an objective approach to supervising elementary school student teachers, utilizing observational instruments and following an interaction analysis format. The primary instrument used was the Instrument for the Analysis of Science Teaching (Hall, 1969). University supervisors were selected for piloting this program due to the fact that they had the time to be trained and were easily monitored by the researcher. Cooperating teachers were not selected for training in the experimental program due to the scheduling problems, and reducing their teaching loads to allow time for participation in the training program.

The student teacher feedback model was developed during the fall, 1976 semester at the University of Kansas. Observation instruments were developed and/or chosen to be part of the package, and implementation began in the spring, 1977 semester. The focus of the instruments and format for the model was to operationally define strategies that were believed to be important to the success of student teachers (Hall, 1969). These instruments, observational in nature, provided immediate feedback to the participants in order to improve their use of these strategies over time, and also provided the basis for discussion with those in a position to aid the student teacher in improving any deficiencies that the student may have had. In addition, the feedback collected from the student teachers themselves suggested revisions for instructional strategies in methods courses and student teaching programs to help meet the needs of future students more adequately. The present study not only evaluated the new program in and of itself, but was compared to the supervisory program currently in use in the Department of Curriculum and Instruction at the University of Kansas.

The problem was to develop a strategy for supervising student teachers that could easily be adapted to any teacher training program with a minimum of time and training and that could also be taught to cooperating teachers to help them evaluate their student teacher's performance more objectively. The primary questions addressed in the study were: Does observational data provide the necessary information to change teacher behavior significantly over time? Does immediate feedback of teacher behaviors motivate student teachers to change those behaviors? Is interaction analysis data, when used in the supervision capacity, an effective means for changing student teacher behaviors, attitudes, and concerns?

CHAPTER II

Review of the Literature

This review has been divided into several sections in order to provide the reader with an overview of the various dimensions included in the present study. These sections include supervision of student teachers, modes of feedback, observation instruments, teacher attitudes and verbal behavior, and teacher concerns.

There has been a tremendous amount of research done in this area and this chapter is not, by any means, all inclusive. However, enough literature was reviewed to provide the reader with an overview of the research into student teacher supervision and related variables and should lead the reader to believe that, in general, conclusions are contradictory and in some cases even misleading. Indeed, even more research needs to be done in this field, which was one of the reasons for undertaking the present research.

Supervision of Student Teachers

There is currently a controversy in the literature on the effectiveness of the college supervisor in student teaching programs. Morris (1974) conducted a study of the effects of the university supervisor on the performance and adjustment of student teachers. Two groups were used, an experimental group with a university supervisor and a control group, without the university supervisor. The results supported the hypothesis of no difference between the two groups in the following areas: ability to motivate students, ability to control students, subject matter orientation, student-teacher communication, teaching methods and procedures, fairness, rapport with the supervising teacher, rapport with the principal, teaching as a profession, and rapport with students.

Dean (1971) surveyed student teachers concerning the adequacy of the supervisor and cooperating teacher in ten areas: motivation of students, variation in classroom procedures, providing for individual differences, building tests, unit planning, discipline, audio-visual use, information about individual students, daily lesson plans, and subject matter. While both groups were rated as adequately providing supervision in these areas, the cooperating teachers were rated higher due to the fact that they had more contact with students.

Johnson (1974) suggested a change in the role of the university supervisor from observer-conference attendee-evaluator to teacher education consultant, whose duties would primarily be to conduct in-service education for student teachers. It was suggested that the bulk of supervisory duties be transferred to the cooperating teachers who would be more qualified due to their daily contact with the student teachers. Problems with this role change included the adaptation to the new role for the university supervisor and cooperating teacher, the time element, and financial problems with developing the new programs to retrain those involved.

Dixon and Seiferth (1974) have also suggested a change in the university supervisors' role. They cite that a common complaint of student teachers was the inadequacy of cooperating teachers during the student teaching. They suggested better screening procedures for co-operating teachers as well as shifting more of the supervisory duties to the cooperating teachers. The university supervisor would provide programs to design individual plans to maximize the student teacher's experience with more supervision by their cooperating teacher, with whom they have more contact.

In the papers previously cited, no mention of the type of supervision provided by university supervisors was made, and, indeed, the type of supervision may make a difference. James (1970) explored three types of college supervision: traditional university supervision, traditional plus observation and discussion of films of experienced teachers, and traditional plus viewing videotapes of the student teachers themselves in a teaching situation. The results indicated that student teachers in the third group developed significantly more inductive-indirect teaching behaviors, while no significant changes in student teacher attitudes were observed between the three groups.

Neal, Kraft, and Knacht (1967) cited several reasons for using university supervisors of student teachers. First, the university supervisor could act as a liason between the public schools and the university. Second, they could lend supervisory support to the cooperating teacher to maximize the student teachers' experience. Third, they could acquaint and interpret the student teaching program with cooperating teachers. Fourth, the university supervisors could serve as evaluators of the program and the students' work. Fifth, they could act as resource people, and as an aid in the placement of student teachers. They concluded that administrators did not really want a student teaching program in the public schools without a university supervisor. They suggested a cooperative effort in the implementation of such programs and, more importantly, suggested that there was little or no significance to the traditional role of the university supervisor, i.e., giving direction to student teachers, and suggested that a change in the supervisor's role was necessary.

In conclusion, there were mixed opinions about the effectiveness of supervisory policies of student teachers. Some researchers suggested the complete transfer of supervisory powers to the cooperating teacher while others suggested more of a cooperative effort. However, it is apparent that the question is not so much who supervises the student teacher, but the type of supervision provided.

Modes of Feedback

There is a wealth of literature on the subjects of modes of feedback provided to student teachers. In general, there are both positive and negative results for the various methods utilized.

Esquivel (1976) studied the effects of three modes of feedback, self, peer, and college supervisor, given to student interns in elementary school science classes. Audiotapes of teaching situations were used. He found no significant difference between the three modes in the specific teaching skills under consideration: higher order questions, probing questions, and wait time II. There was also no significant difference in the attitudes toward teaching over time.

Harris (1973) studied the effects of videotaping student teachers in order to increase student involvement. Three groups were studied. Group one received videotaped feedback during a 10 week period, group two received videotaped feedback during a five week period and group three received no feedback. The results indicated that there was no difference between the three groups in terms of student involvement.

Quimby (1972) also studied the impact of videotaping in the analysis of student teachers and concluded that the use of videotapes was valuable for three reasons. First, it provided immediate feedback to students. Second, it can be used with a college supervisor and/or cooperating teacher for more of a variety of criticism. Third, it can be used in a seminar situation where peer feedback is possible.

Walencik and Tuckman (1974) studied the effects of dissonance and positive reinforcement as feedback mechanisms in altering the humanistic behavior of student teachers. The results suggested that feedback consisting of actual teaching behaviors, i.e., high dissonance as defined by Walencik and Tuckman, yielded statistically significant differences in teacher behavior as compared to no feedback, while positive reinforcement (low dissonance) didn't produce any desired changes. Therefore, it was concluded that supervisors would benefit student teachers by making them aware of their actual teaching behaviors and not by reducing dissonance by using reinforcement.

Wilbur and Gooding (1973) studied attitude changes in student teachers relative to the type of teaching experience. Four methods were studied: two eight-week sessions with one-to-one supervision, one 15 week session in a team teaching environment, one eight week session with one-to-one supervision, and a control group which received regular on-campus instruction. Five dependent variables were studied using the Teacher Perception Q Sort: self-revealing percepts, learner centered/teacher centered perceptions of education, broad/narrow view of the teaching role, process/fact oriented, and freeing/controlling attitudes toward children. The results suggested that all groups, with the exception of the control group, developed more controlling attitudes, with the controls becoming less restricitive, controlling, and self-concealing.

Balzer, Evens, and Blosser (1973) conducted a review of the research on teacher behavior in science education. One area covered was the use of supervisory conference feedback. The results suggested that supervisor feedback and videotaped feedback by themselves were ineffective. However, combining these two techniques resulted in significant changes in specific behaviors. They also reported that systematic training in observation of classroom behavior, inservice training, and microteaching were effective. However, they reported that more research was needed in the areas of supervisory conferences plus videotaped feedback, videotaped and/or audiotaped feedback, teacher expectations, student feedback, and on-campus versus off-campus activities.

Observation Instruments

There are many observation systems available for providing feedback to teachers. Simon and Boyer (1968) provided a list of 92 such instruments and since then many new ones have been developed.

In an early study of classroom interaction, Thomas (1929) observed the social interaction of nursery school children. An early attempt at studying student-teacher interaction was done by Anderson and Brewer (1945, 1946). They divided teacher-pupil interaction into two general categories, domination, i.e., teacher dominating behaviors, and integration, i.e., less teacher and more student dominating behaviors, and developed and I-D ratio, integrative contacts to dominative contacts.

Withall (1949) laid the foundation for the formulation of the theory of interaction analysis, later designed by Flanders (1960). Withall categorized teachers in seven areas which fell along several continua: problem-centeredness to person-centeredness, objectivity-subjectivity, and learn-centeredness to teacher-centeredness. He concluded that students were positive to learner centered activities and negative to teacher centered activities.

Medley and Mitzel (1963) developed the OScAR (Observation Schedule and Record) for measuring classroom behavior. The system classifies interaction according to activity, grouping, signs, materials, subject matter and expressive behavior, along three dimensions: emotional climate, verbal emphasis, and social structure. Morrison (1962) used this system and concluded the emotional climate in the classroom was an important factor in the supervisors' ratings of teacher competence.

Perhaps the most widely used observation system is that developed by Flanders (1960), Flanders Interaction Analysis Categories. This system consists of 10 categories, seven involving teacher talk, two for student talk, and one for silence. Teachers are rated at three second intervals for a specified time period and the resulting tallies are entered into a 10 x 10 matrix, from which patterns are identified and interpreted.

Yulo (1967) conducted a study of student teachers in which the experimental group received feedback via Flanders system from their supervisor. The control group received no such feedback. Results indicated no difference in verbal behavior between the two groups at the end of the study. However, the experimental group did become more aware of their classroom interaction. Yulo concluded that Flanders system can be a useful component in a comprehensive approach to supervision.

Olmo (1975) also used interaction analysis in a problem solving approach to supervision, i.e., the interns were encouraged to hypothesize relationships between teaching effectiveness and the timing of particular techniques. Feedback was given by peers. The results indicated that the interns elicited higher levels of thinking and more student involvement than experienced teachers. Also, the interns played less of a dominant role in the classroom and became more of a resource person.

Nickel (1970), using a modified interaction analysis system, found that student teaching strategies closely paralleled those of cooperating teachers during the early period of student teaching, but as the student teachers gained more experience, they began to develop their own teaching patterns.

Matthews (1967) used Flanders system in a similar study and found that student teachers used cooperating teachers as models in such areas as questioning skills and the use of restrictive responses. At the same time they adopted less similar patterns in other areas, such as the use of direction.

Moskowitz (1967), also using this category system, found that teachers trained in the use of interaction analysis used significantly more indirect teaching strategies. Also, this training fostered greater individuality in the cooperating teacher.

The Instrument for the Analysis of Science Teaching (IAST) was developed by Hall (1969). It was originally a 26 category system, the IAST Parts I and II. It was used to study the behaviors of teachers and children using Science--A Process Approach, an elementary school science curriculum. Based on this early research, the instrument was revised and now exists in two different versions, the IAST Base, with 14 basic categories, and the IAST V.2, with 32 categories. The categories are not content specific and Hall (1972) states that,

> ". . .the IAST has turned out to be relevant, not only to those interested in science teaching, but also to researchers, teachers, supervisors, and others interested in process teaching in all content areas and at all grade levels."

The IAST has an emphasis on process teaching (Parker and Rubin, 1966), and on the verbal and nonverbal behaviors of teachers and pupils. The instruments are located in Appendix A.

The IAST Base, composed of 14 categories, has been shown to be easily learned by preservice and inservice teachers (Hall, 1971). In the present study the IAST Base was mastered and subsequently used by a university supervisor to code classroom observations and provide immediate feedback to the student teacher in post-observation conferences. Hall (1972) suggested that the IAST V.2 was a useful research instrument and was also readily useful to supervisors. However, due to the complexity of the system, i.e., 32 categories, it would not be as useful for providing immediate feedback, but, through the use of computer programs, could provide more indepth analysis of teacher behaviors.

The IAST has been used in several research studies. Butts (1969) used the IAST V.2 to study the teaching patterns of preservice education students as they presented lessons to children and to peers. He concluded that more questions and clarification were used when the participants presented lessons to children. Irwin and Butts (1971) wanted to determine what influenced the teaching strategies of teachers. They found that teachers were more influenced by the children rather than the topic of the lesson.

Hall (1968) assessed behaviors of teachers using Science--A Process Approach and found that teachers used more questions and less lecture with this curriculum than with a text book approach.

Verbal Interaction Ratios

The use of matrices and ratios to summarize verbal interaction in the classroom was developed by Flanders (1960) and Withall (1949). Essentially, the coded data are placed in a matrix in order to group the data in a manner to ease interpretation. Then, using row and column totals, ratios can be calculated to describe certain aspects of the data. Hall (1972) built upon Flanders work and has described eight ratios and tactics that can be studied using the IAST data. He developed these expanded ratios, based on the research of Withall, Flanders, and others, because they have been viewed as being characteristic sequences of behavior used in a variety of classroom experiences and can be used in the form of feedback to produce change in teacher behavior. However, Balzer, Evans, and Blosser (1973), in their comprehensive review of research on teacher behavior in science education, indicated that the literature was very contradictory relative to the effectiveness of observational systems in producing significant changes in these ratios. The particular ratios used in the present study were described by Hall (1972). They were: Indirect/Direct, the ratio of indirect teacher verbal behaviors, such as providing positive verbal reinforcement and accepting student feelings, to direct behaviors, e.g., lecturing and giving directions; Revised Indirect/Direct, the ratio of indirect/direct motivation and control behaviors; the ratio of teacher talk to student talk; and the flexibility ratio, an indicator of the variety of teacher behaviors employed. These ratios will be described in greater detail in chapter III.

Borich (1977), in his analysis of teacher appraisal systems, has pointed out that those teacher variables that have relatively strong relationships to pupil achievement include variability (flexibility), use of student ideas and general indirectness, and criticism. Stallings (1975) also found that the use of a wide variety of activities and manipulative materials contributed to students ability to solve problems and to reason. Berliner (1975) also found flexibility to be a significant characteristic for describing more effective teaching.

Soar (1973), in his research on teacher assessment problems, stated that,

> "indirectness of teacher behavior tends to be associated positively with assessment growth, favorableness of pupil attitudes, and creativity growth. Teacher flexibility tends to be associated positively with achievement gain. Teacher criticism tends to be negatively related to achievement gain."

Flanders and Simon (1969), in their research on teacher effectiveness, concluded that,

> "the percentage of teacher statements that make use of ideas and opinions previously expressed by pupils is

> directly related to average class scores on attitude scales of teacher effectiveness, liking the class, etc., as well as average achievement scores adjusted by initial ability."

The type of teacher behaviors they were describing were indirect behaviors.

Teacher Attitudes and Verbal Behaviors

There has been relatively little research done on the relationship of various teacher attitudes and classroom interaction. However, there is a lack of consistency in the results and a general difficulty in drawing any conclusions.

Rexford (1971) investigated the relationship of pupil control behavior and classroom interaction in secondary school classrooms. Based on his Pupil Control Ideology Form results, he selected the 12 most "humanistic" and 12 most "custodial" teachers for observation using Flanders' observation system. Observational results indicated that custodial teachers talked a larger proportion of the time in class than humane teachers, suggesting a relationship between pupil control ideology and percentage of teacher talk. Goldenberg (1971), in a similar study using elementary teachers, found no significant differences in the proportions of indirect/direct behaviors and student verbal behaviors between humane and custodial teachers.

Laney (1970) investigated the relationship between verbal behavior and interpersonal orientation of university teachers. He concluded that more altruistic teachers spent more time in indirect verbal behaviors than more manipulative teachers. However, his conclusions were based on results that apparently did not reach significance levels.

Harvey (1966) studied the relationship between teachers' overt classroom behavior, which he had previously shown to be a function of their belief systems, and pupil learning and performance in the kindergarten and first grades. His results indicated that the concreteness-abstractness of teachers' beliefs systems affected their overt punitiveness, dictatorialness, and resourcefulness. He also concluded that the abstractness of teachers' beliefs systems affected pupil performance.

Goggin (1972) investigated teacher education instructors' understanding of the concept of humaneness and concluded that these teacher trainers do not understand fully the complexities of the concept and that professional education and liberal arts instructors hold similar views toward humaneness. He recommended that this concept become the central theme in teacher training programs.

Stages of Concern

The Stages of Concern (SoC) are one dimension of the Concerns Based Adoption Model (Hall et al., 1975) to describe the many important aspects in the adoption of innovations. Hall (1975) asserted that change was a developmental process and that those involved pass through defined stages in the adoption process. The focus of the CBAM is on the individual who must make the change. The model proposes to describe the "developmental steps of growth in feelings and skills that are experienced by individuals as they adopt innovations" (Hall, 1975). One of the dimensions of this model is the Stages of Concern.

"Concerns are part of the change process as experienced by individual educators involved in implementing various innovations..." (Hall, 1975). The Stages of Concern dimension suggests that:

> "as individuals move from unawareness and nonuse of an innovation to ultimate, highly sophisticated use of an innovation, their 'concerns' move through identifiable stages as well. There appears to be a somewhat developmental progression in the kinds of concerns that innovation users have about their use of an innovation."

(Hall, 1975).

During the initial stages in the adoption process, i.e., awareness of and consideration for use of an innovation, individuals experience self concerns. Questions at this time include, "How will this effect me?", "How much of my time is it going to take up?", and "How will it effect my salary and promotions?".

After the initial adoption has occurred, there is a shift to task concerns. Expressions such as, "Planning takes forever", "Grading this is too time consuming", and "I have no time for other activities", are often encountered.

After the task concerns are resolved, the individuals may move on to the final stage, impact concerns. These are characterized by such comments as, "How can I refine the innovation to improve student learning?", and "I wonder if there are other innovations that could do a better job?". There are seven Stages of Concern hypothesized to form the individual's "affective field" in relation to the adoption of an innovation. These are summarized in Table 1 (Hall, 1975).

Hall and his associates have developed an 35 item Stages of Concern Checklist to measure the stages of concern for an individual. The

Table 1

Stages of Concern About the Innovation (Hall, 1975)

Stage of Concern		Definition of Concern
0	AWARENESS	No indication of interest in or concern about the innovation.
1	INFORMATIONAL	Expresses a general awareness of the innovation and learning more about it. The user seems to be unworried about himself in relation to the innovation. The potential adopter considers substantive aspects of the innovation in a selfless manner inquiring about general characteristics, effects, and requirements for use. Information needs and interest are of a more cursory nature reflecting general noncommittal feelings, limited evaluation and minimal personal investment.
2	PERSONAL	Reflects uncertainty about the roles played by the individual user and of the demands placed upon him, including analysis of his role in relation to the reward structure of the organization decision making and consideration of potential conflicts with existing structures or personal commitment that have financial or status implication of the program for self and colleagues may also be expressed.
3	MANAGEMENT	Expressions about the process of using the innovation and the best use of information and resources. Statements focus on issues related to efficiency, organizing, managing, scheduling, and changing time demands.
4	CONSEQUENCE	Indications of exploration of impact of the innovation on clients in one's immediate sphere of influence. Expressions about relevance for clients, evaluation of client outcomes, including performance and competencies, and how his use of the innovation can be changed to increase client outcomes are stated.
5	COLLABORATION	Focus is on increasing impact on clients through collaboration with others regarding use of the innovation.
6	REFOCUSING	Indications of user's exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative.

checklist consists of seven scales, each containing five items. The content of the scales is based on the written responses of a large sample of teachers and professors relative to their concerns about an innovation being adopted by their institutions. The SoC Checklist has been analysed in several studies. Test-retest reliability has ranged from .65 to .86, internal consistency ranged from .80 to .93, and the alpha coefficient was .96 (Hall, 1975).

In the present study, the innovation was student teaching and the SoC for the student teachers were treated as a dependent variable. The author was concerned that the method of supervision might play a role in the development of higher SoC for the student teacher. Supervisors' duties included helping student teachers through initial problems and concerns about logistical aspects of the student teaching experience and could, in fact, help them through concerns with curriculum and other similar matters in order to focus in on the students, and, therefore, higher Stages of Concern. The present research studied two different methods of interaction between the student teachers and their supervisors; interaction that dealt with the concerns and needs of student teachers. Therefore, Stages of Concern was a necessary variable for inclusions in this research.

Conclusion

It is evident from this review that there are many problems associated with supervising and evaluating student teacher performance. Not only does the question arise concerning who can provide the best type of feedback and do the best job of supervising and evaluating the potential teacher, but the effectiveness of the modes of providing the information are also ambiguous. Criteria have been identified that relate to what the good teacher should be and what specific techniques student teachers should be exposed to, but there is no real consensus.

The present study dealt with some of the specific strategies identified in the literature, others currently being dealt with in methods courses at the University of Kansas, and still others identified by the student teachers themselves as a part of the present study.

The present project attempted to develop, implement, and evaluate a supervisory program for elementary student teachers utilizing an interaction analysis format that will provide substantive information concerning their actual teaching performance and will promote individual growth within a framework suitable for supervising student teachers in a variety of situations while maintaining a uniform approach by univeristy supervisors.

CHAPTER III

Methodology

The purpose of the study was to develop an elementary school student teacher supervision program utilizing observational data and immediate feedback of this data to student teachers by a university supervisor. The effects of this program, and in comparison to the one currently in use, were studied using, as dependent variables, attitudes, concerns, perceptions of preservice training, and specific teacher behaviors, i.e., teacher talk to student talk ratio, direct to indirect teacher behaviors, direct to indirect motivation/control behaviors, attitudes, concerns, flexibility, and perception of preservice preparation.

This chapter will describe the methodology employed. The first section includes a description of the sample of elementary student teachers who participated in the study. In the next section, there is a detailed description of the independent variables, including an analysis of the experimental supervisory program developed in this research as well as the supervision program currently being used at the University of Kansas. Following this is a section explaining the constant variables that were part of both supervision programs. The dependent variables, including a discussion of the instrumentation used and the administration and scoring of these instruments, is then described. Finally, the null hypotheses are stated followed by a discussion of the data analysis procedures that were used to test these hypotheses.

Sample

The participants included 33 elementary school student teachers from the University of Kansas during the spring, 1977 semester. They all did their student teaching in the Lawrence, Kansas school district with the exception of one student assigned to the McClouth, Kansas school district.

The participants were divided into two groups. Group one included 18 student teachers and was labeled the experimental group. Group two included 15 student teachers and was the comparison group. The experimental group received supervision by university supervisors and used the program developed by the researcher. The comparison group also received supervision from university supervisors. However, this group received supervision in the manner used traditionally by the University of Kansas supervisory staff. This method of supervision will also be described in a later section.

The sample was further divided into two subgroups, those who taught primary grades, i.e., kindergarten through third grades, and those who taught intermediate grades, i.e., fourth through sixth. In the experimental group there were 11 primary and seven intermediate teachers and in the comparison group there were eight primary and seven intermediate teachers.

Unfortunately, random sampling procedures could not be utilized. This was due to the fact that observers were assigned to particular schools, students selected where they wished to student teach, and the number of students assigned to a supervisor had already been determined. The selection of the supervisors to participate in the experimental program and traditional program was done by the director of the program.

Independent Variables

There were two independent variables in this study: the method of supervising student teachers and the grade level. The experimental groups received the supervision approach developed by the author. The comparison groups received the approach used in the past at the University of Kansas. The difference between the two systems involved the interaction between the student teacher and the university supervisor at post observation conferences.

The Experimental Model. The system of supervision developed and implemented in the present research involved the use of two categorical observation systems for describing teacher behavior in the classroom and an expectation of teaching activities record.

The primary observation instrument was the Instrument for the Analysis of Science Teaching (IAST). There are two versions of this instrument, the IAST Base and IAST V.2. The IAST has an emphasis on process teaching and is not limited to science in its scope. The IAST Base consists of 14 categories and the IAST V.2 32 categories. The categories and a description of them appear in Appendix A. They emphasize both verbal and nonverbal behaviors of teachers and children with relatively equal treatment of teacher and pupil behaviors. For ease in scoring and to provide immediate feedback, the IAST Base was used by the experimental group supervisors to provide immediate feedback to teachers and the IAST V.2 was used by the reseracher to code videotapes made of the participants during classroom instruction. Both groups were videotaped and data were not fed back to the student teachers but were used only in the evaluation of this project.

Content validity of both versions of the IAST has been established by Hall (1969, 1972) in his development of the instrument. The development of the IAST was based on the initial work of Withall (1949) and subsequent work on interaction analysis of Flanders (1960). Refinement and field testing of the IAST was done by Hall (1969). Reliability was based on the training of coders to reliably categorize observation. Hall (1969) developed an instructional module, Analysis of Teaching Behavior, for training teachers to use the IAST Base. This module was used in the present research to train supervisors in the use of the IAST Base. The module included an audiotape of sample lessons for coding practice, transparencies, handouts, and a description of a series of activities and discussions to facilitate use of the IAST Base. The training sessions included practice in coding teacher behaviors and interpreting the data. The training sessions lasted approximately five hours with three hours of work outside of class. This included observing videotapes and several classes live. Interrater reliability was established using the two supervisors in the experimental group and the author as raters. Interrater reliability was calculated using Scott's Coefficient (Scott, 1955). The procedure for using Scott's Coefficient is located in Appendix B. The reliability coefficients for training the supervisors ranged from .64 during the initial training sessions to .88 at the conclusion of training. An undergraduate student was employed to assist in the analysis of videotape data using the *IAST V.2*. This assistant was trained using the same training module and interrater reliability was calculated using Scott's procedure. Reliability coefficients ranged from .75 to .87. The supervisors made four observations of the student teachers. The sessions, using the *IAST Base* lasted 30 minutes with observation occurring every three seconds for a two minute interval followed by one minute rest.

The coding was done on a matrix as illustrated in Appendix A. The diagonal "steps" allowed the coder to place categories in the appropriate matrix cell to facilitate interpretation of the results since feedback was given immediately following observation.

Hall (1972) suggested that during actual data collection the observer and trainer should meet at least once every two weeks for a reliability check and discussion of any problems. This procedure was carried out for the present study using Scott's Coefficient to calculate the interrater reliability. These reliability coefficients ranged from .75 to .85.

Four ratios were calculated after each observation. They were Indirect/Direct behaviors, Revised Indirect/Direct, Teacher talk/Student talk, and Flexibility ratios. A detailed description of each ratio appears in Appendix C.

The second observation instrument is a subscale of the *Teacher Practices Observation Record (TPOR)* developed by Brown (1968). The system was modified by Poynor and Wetherold (1976). The subscale used was the differentiation scale, which described individualization in the classroom. The items appear in Appendix D. There were six items. The odd numbered items correspond to "traditional" instructional methods and the even numbered items to an individualized philosophy. The supervisor observed the student teachers for a five minute interval, using the IAST Base and then coded the teacher using the TPOR subscale. This was done using the teacher objective coding procedure. This procedure entailed using one of the five following objectives for what transpired during the observation period:

1. Reviews old material (R)--teacher reviews processes or facts previously given to students using a lecture or discussion method of review.
2. Presents new material (P)--teacher presents new information, introducing new processes or facts using a variety of methods of presentation.
3. Practices new material (Pr)--teacher and class practice new material through discussion, game playing, or other entire group activities.
4. Independent seatwork (Is)--pupils work independently on assignments although teacher may assist individual or small groups.
5. Project or group activity (J)--all follow-up activity on project or assignment that is not specifically independent seatwork; may include pupils working as small groups on group assignments, individuals/groups making objects or drawings about topic, or individuals/groups presenting reports to the whole class.

While the primary observation system, the IAST Base, was used to code classroom interaction, the TPOR subscale provided more in-depth information as to the degree of individualization during the observation period, thereby supplementing the IAST Base information.

The training procedure for using the TPOR differentiation subscale paralleled the training module for the IAST Base. Since there were only six categories in the TPOR subscale, training and implementation was considerably easier. The observers and the author ran interrater reliability checks using Scott's Coefficient. Interrater reliability coefficients were above .90.

Conferences between the supervisors and student teachers occurred immediately following each observation. Student teachers were always informed at least one week in advance of when an observation would occur. Prior to each observation student teachers were required to fill out the Student Teacher Observation Expectations Sheet. This sheet is located in Appendix D. The completed sheet was handed in to the supervisor prior to the lesson that was observed. The author trained the two experimental supervisors to conduct conferences in the following manner. Supervisors presented the matrix to the student teachers and described the categories of the IAST Base. Clusters of tallies were noted and described to the student teacher. Each of the four ratios previously described were then explained to them and related back to the expectations sheet. The information presented to the student teachers was strictly informative and not evaluative, i.e., the supervisor presented the data to their student and did not pass judgment, that was for the student teacher to do internally. TPOR data was presented in a similar manner. Following this procedure, the supervisor would answer any questions the student teacher had about the lesson or any other problems, but answered only in a nonevaluative way. Conferences lasted approximately 30 minutes.

Traditional Student Teaching Supervision Program. The traditional program for supervising student teachers involved observing the student using the criteria on the student teaching evaluation sheet as an evaluative procedure. This sheet is located in Appendix E. The student teacher was rated from "good" to "poor" on the criteria. Afterwards the supervisor met with the student teacher and with the cooperating teacher separately to discuss the data. Data was presented in a judgmental, i.e., evaluative, manner.

There were additional tasks which were required of the student teachers in this program. First, the student selected 10 self-directed activities from a list provided by the supervisor. Second, the student teachers were required to develop a comprehensive unit plan which they also discussed with the supervisor. Third, there was an observation checklist to facilitate the entrance and familiarization of the student teacher with the cooperating teacher's room, schedule, and students. The activities, unit plan criteria, and checklist are in Appendix E. There were also two group meetings during the semester. The first was at the beginning of the semester to acquaint the student teachers with the supervisor. There were also a number of seminars held during the semester which were attended by all student teachers. Supervisors did not participate. A list of seminars is in Appendix E. Finally, at the conclusion of the semester there was a final meeting during which the student teachers went over the final evaluation sheets and student teacher checklist. Grades were determined based on this information.

There was no required videotaping in the traditional program. However, when it was felt necessary for a student teacher to be videotaped, e.g., for a special problem, it was done and discussed with the supervisor.

Monitoring Supervisors. A concern throughout the planning stages of the project was whether or not there would be any difference between the two groups in the feedback given following the lesson observation. The problem was resolved by asking supervisors to make an audiotape of two post-observation conferences. There were three supervisors in the comparison group and two in the experimental group. The tapes were coded by the author using the IAST Base. Codes for the supervisors were then collapsed according to the following criteria: categories five, directions, and six, substantive information, into a more general "giving information" category; categories three, accepting student statements, and four, asking questions, into a general "eliciting" category; and categories one, accepting feelings, two, praise, and seven, justification of authority, into a "valuing" category. A chi-square Test of Independence was then employed to see if there was any significant difference in the frequency distributions in the two groups across these three comprehensive categories. The data are presented in Appendix F. The null hypothesis of no difference between the two groups was rejected at the .01 level. It can be concluded from the data that the experimental group used significantly more information giving behaviors and the comparison group significantly more valuing behaviors.

Constants

Several aspects of the traditional program were also utilized in the experimental program with slight modifications. First, the traditional program required 10 projects to be completed from the list in Appendix E. The experimental group also completed 10 projects. Second, both groups were required to complete the comprehensive unit plan, the observation checklist, and attend all seminars. The format of the group meetings were altered slightly. The first meeting, during which students were familiarized with the program, was conducted by the author and the supervisor and was held separately from the comparison group. However, at the conclusion of this meeting, data were collected from both groups on the dependent variables described in the next section. The instruments were administered in a meeting of all participants in both groups. The final group meeting was conducted in a similar manner. Final evaluation of experimental group student teachers was similar to those in the comparison group. The standard final evaluation form was utilized. However, the criteria for filling out this sheet was different for the two groups since different types of data were collected at observations of lessons. The final evaluation form is in Appendix E.

Dependent Variables

There were seven dependent variables. First, were the concerns of teachers as defined by the Concerns Based Adoption Model (Hall, 1975). The concerns of the student teachers were measured by the Stages of Concern Questionnaire. A copy of this instrument is in Appendix G.

The SoC Questionnaire consists of seven scales, each containing five items. Reliability studies for the instrument have been done in several studies. One week test-retest reliability correlations ranged from .65 to .86. Internal consistency, measured by calculating alpha cooefficients, ranged from .80 to .93, and the total score alpha coefficient was .96. Validity of the instrument was established by factor analysing the responses of 366 classroom teachers to a Likert type rating scale of items concerning teacher concerns about innovations at their institutions. The list of original items was compiled by asking a large sample of teachers and professors to express, in writing, their concerns about innovations being adopted by their institutions.

The second dependent variable, teacher attitudes, was measured by the Teacher Attitude Questionnaire (TAQ) (Wight, et.al, no date). The TAQ is composed of nine subscales with a total of 50 items which are factor analysed into 17 factors. The items were designed to discriminate between teachers leaning towards the affective, humanistic teaching philosophy from those with a traditional, academic orientation. The present project utilized 13 items included under the "philosophy" section of the questionnaire. Hoyt reliability coefficients were determined for the subscales, but not for individual items. Item by subscore correlations are in Table 2. Validity information was not included in the descriptive information. The instrument is in Appendix G.

The third dependent variable was called preparation adequacy

Table 2

Item x Subscore Correlations for the *Teacher Attitudes Questionnaire*

Item	Correlations
I	.4704
2	.4498
3	.4190
4	-.3053
5	.3754
6	-.4458
7	-.4866
8	.6184
9	-.2879
10	-.5421
11	.2195
12	-.2416
13	.4260

and was based on data collected from the Preparation Adequacy Inventory (PAI). This instrument was designed by the author to gather data on the student teacher's perceptions of the adequacy of their preservice education training. The PAI is located in Appendix G. The items were based on objectives in various methods courses and teaching skill courses in the School of Education at the University of Kansas. Content validity was established by having the items reviewed by two experts, Dr. William LaShier, Professor of Education, and Ms. Sue Hamelin, teaching assistant for the generic teaching skills course, relative to the validity for what was being measured. Items were changed, added, or deleted according to their suggestions. No reliability information is available. It is hoped that PAI data will be compiled and distributed to instructors for updating methods courses.

The fourth, fifth, sixth, and seventh dependent variables were teaching behaviors, as measured by the IAST V.2. The IAST categorized teacher-student classroom interaction and was mainly concerned with process teaching. There were four IAST ratios used for describing the interaction that took place. The ratios are described in Appendix C. The four ratios were calculated for each of the participants in the experimental and comparison groups using videotapes. These tapes were made for each participant during the first four weeks of the student teaching experience and during the last four weeks. Participants were instructed to teach a 20-30 minute Science Curriculum Improvement Study (SCIS) lesson. The rationale for using SCIS was that it is the science curriculum used throughout the Lawrence and McClouth school districts and provides a wide variety of activities for student teachers to use. All of the participants had had training in the use of SCIS in their science methods course and were, therefore, familiar with the curriculum. All participants were instructed to use the same lesson format for both videotaping sessions, i.e., the content could differ, but format, such as lecture, demonstration, small group experiment, etc., should be the same.

Unfortunately, not all participants were able to use SCIS. Some of the cooperating teachers did not teach science at all; for others it was the wrong time in the semester; and some did not want their student teachers to teach science. Fortunately, the number of participants who were not able to teach a SCIS lesson was small and 82% did follow the plan and teach a SCIS lesson. All participants taught a lesson with the same format for both videotaping sessions.

Administration and Scoring

The Stages of Concern Questionnaire, Teacher Attitudes Questionnaire, and Preparation Adequacy Inventory were administered two times, once at the first student teacher meeting prior to the start of student teaching and at the final meeting at the conclusion of the semester. Videotapes were made on two occasions, once during the first four weeks and again during the last four weeks.

Stages of Concern Questionnaire data were scored and analysed by Dr. Gene Hall and his staff at the University of Texas Research and Development Center for Teacher Education.

Each individual received a score for each Stage of Concern and was given a percentile rank for each Stage. These data are in Appendix J.

The procedure for assigning an individual to a particular Stage, i.e., the SoC characterizing that individual, was described by George (1977). He suggested using the SoC with the largest percentile rank. In case of ties, the higher stage was used since this was indicative of the highest concerns the individual had. The Stages of Concern for each participant are in Tables 4 and 5.

The _Teacher Attitudes Questionnaire_ were scored according to the format designed by Wight et al. This format is in Table 3. A total score was calculated by summing individual item scores across all items.

PAI data were scored by summing individual responses on each item. An individual received a score of "1" on an item if the "1" was circled, a "2" if the "2" was circled, etc. Item response scores were then summed to arrive at a total score.

IAST Base ratios were calculated, by the supervisors, by hand using the column totals of the matrix. _IAST V.2_ data were analysed, i.e., the matrix and ratios were calculated and printed, using the computer program designed by Hall (1973) specifically for this task.

Null Hypotheses

The following are the null hypotheses for the study:

1. There is not significant difference between the experimental and comparison groups in the Stages of Concern.
2. There is no significant difference between the primary and intermediate level student teachers in the Stages of Concern.
3. There is no significant difference between group centroids for the experimental and comparison groups for the ratio of

Table 3

Scoring Format for the Teacher Attitudes Questionnaire

Item	Response 1	2	3	4	5	
1	5	4	3	2	1	
2	5	4	3	2	1	
3	5	4	3	2	1	
4	1	2	3	4	5	
5	5	4	3	2	1	
6	5	4	3	2	1	Values assigned to each item alternative.
7	5	4	3	2	1	
8	5	4	3	2	1	
9	5	4	3	2	1	
10	1	2	3	4	5	
11	5	4	3	2	1	
12	1	2	3	4	5	
13	5	4	3	2	1	

Table 4

Stages of Concern for the Experimental and Comparison Groups

Experimental		Comparison	
Pre	Post	Pre	Post
0	0	0	0
0	2	1	2
1	4	0	6
4	2	3	0
0	2	0	0
0	1	0	0
1	2	0	0
0	4	2	3
0	0	2	3
2	0	2	6
2	6	0	1
0	0	1	3
3	0	1	4
0	4	3	3
2	2	0	0
1	6		
0	0		
0	-		

Table 5

Stages of Concern for Primary and Intermediate Grade Levels

Primary		Intermediate	
Pre	Post	Pre	Post
0	0	0	2
1	4	1	2
4	2	0	4
0	2	0	-
0	1	0	0
2	0	0	4
2	6	1	6
0	0	0	0
3	0	3	0
2	2	1	3
0	0	0	0
0	0	0	6
0	0	2	3
1	2	2	3
2	3		
3	3		
0	1		
1	4		
2	6		

indirect to direct teaching behaviors, the ratio of indirect to direct motivation and control behaviors, the ratio of teacher talk to student talk, flexibility, teacher attitudes, and student teachers' perception of preservice training.

4. There is no significant difference between the group centroids for the primary and intermediate levels for the ratio of indirect to direct teaching behaviors, the ratio of indirect to direct motivation and control behaviors, the ratio of teacher talk to student talk, flexibility, teacher attitudes, and student teachers' perception of preservice training.
5. There is no significant interaction between the main effects for the ratio of indirect to direct teaching behaviors, the ratio of indirect to direct motivation and control behaviors, the ratio of teacher talk to student talk, flexibility, teacher attitudes, and student teachers' perception of preservice training.

Data Analysis

The first two null hypotheses could not be tested in the same manner as the others due to the ordinal nature of the data. These data were looked at in two ways. First, the difference between the groups on the pre data was tested using the Mann Whitney U Test (Siegel, 1956). Next, the difference between the two groups on the post data was tested using the same procedure. Third, the difference from the pre to post data was tested for each group using the Wilcoxon matched pairs signed-ranks test (Siegel, 1956). These procedures were also utilized for the grade level independent variable, and for grade level within the experimental and comparison groups. A description of the Mann Whitney U Test and the Wilcoxon matched pairs signed-ranks test are in Appendices H and I, respectively.

Hypotheses three through five were tested using a multivariate analysis of variance design (Tatsuoka, 1971). The computer program, Multivariance (Finn, 1976), was employed in the analysis of data. This program allowed for several analyses to be carried out simultaneously. The following were used in the present study. The data from the first administration of the instruments and first videotape data served as covariates in order to equate the groups. Analysis of covariance was used and a multiple regression, using the covariates as predictors was employed. The overall multivariate F ratio was calculated to test the difference between groups, level and interaction of post data. For each overall test, univariate F ratios were printed for each dependent variable. In addition, canonical analyses were carried out for each test and discriminate functions were calculated to provide information concerning the contribution of dependent variables and their power to discriminate between groups and between levels.

Summary

A 2 x 2 multivariate analysis of variance design was used for data analysis with groups, experimental or comparison, as one independent variable and grade levels, primary or intermediate, as the other independent variable. Dependent variables were the Indirect/Direct ratio, Revised Indirect/Direct ratio, Teacher talk/Student talk ratio, Flexibility ratio, teacher attitudes, and preparation adequacy. Stages of Concern data were analyzed using nonparametric procedures because of the ordinal nature of that data. The groups were equated using pretreatment data as covariates and posttreatment data to test the hypotheses.

CHAPTER IV

Results and Discussion

In this section, the analysis of the data will be reported and discussed. The results are described in two parts. First, the Stages of Concern are reported, since these data were analysed separately due to their ordinal level of measurement, and then the multivariate analysis of variance data is reported. The discussion section is arranged in a similar manner.

Results

Stages of Concern data were analysed in several ways that are descriptive in nature. The SoC figures for each participant are given in Table 4 for the groups variable, and Table 5 for the grade level variable. Nonparametric procedures were utilized to test for any differences between the two groups and between the two levels to detect any differences from pretreatment to posttreatment.

The first analysis tested the hypothesis of no difference between the two groups for the pretreatment administration of the SoC Questionnaire. This was done using the Mann Whitney U Test (Siegel, 1956). The null hypothesis was rejected at the $p < .05$ level. The observed U value was 127.5 and the critical U was 80. The experimental group's SoC were significantly higher than the SoC for the comparison group on pretreatment data. This procedure was also done for the posttreatment data with the same results, i.e., the null hypothesis was rejected. The obtained U value was 130 and the critical value at $p < .05$ was 75. Looking at Table 4, the posttreatment for SoC for the experimental group were significantly higher than for the comparison group.

The groups data were analysed next to test the hypothesis of no difference from pretreatment to posttreatment for each group. The Wilcoxon Test (Siegel, 1956) was utilized to test this hypothesis. For the experimental group the null hypothesis was accepted, with the obtained Wilcoxon T value of 15.5 and the critical T at $p < .05$ of 14. For the comparison group the null hypothesis was also accepted. The obtained T value was 6.5 and the critical at $p < .05$ was 6.0. These analyses indicate that there was no difference in SoC from pretreatment to posttreatment.

The same procedures were done for the other independent variable, grade level. For the hypothesis of no difference between the primary and intermediate levels on the pretreatment data the obtained U value was 109.5 and the critical U value at $p < .05$ was 78. The null hypothesis was rejected. The primary level student teachers had significantly higher SoC on the pretreatment data than the intermediate level student teachers. For the posttreatment scores, the null hypothesis was also rejected with the obtained U value of 101 greater than the U critical at $p < .05$ of 72. Again, the primary level student teachers had higher SoC than the intermediate level student teachers.

For the hypothesis of no difference from pretreatment to posttreatment for the primary teachers, the Wilcoxon Test was used, and the hypothesis was accepted. The obtained T value was 21 and the critical T was 14 at $p < .05$. For the intermediate teachers, the null hypothesis was rejected at the $p < .05$ level. The obtained T value was 6.0 and the critical value was 8.0. These data indicated that the intermediate student teachers had significantly higher SoC after treatment.

In addition to the groups and levels SoC analyses, levels within groups were also tested for no difference between levels within groups and from pretreatment to posttreatment. The first analyses were for primary teachers. The null hypothesis between primary teachers who were in the experimental and comparison groups on the pretest was rejected at $p < .05$. The obtained U value was 45.5 and the critical U was 19. The null hypothesis was tested for posttreatment data and it, too, was rejected with the obtained U value of 32 exceeding the critical U value at $p < .05$ of 19. The primary experimental group student teachers had higher SoC than the primary comparison group for pretreatment data and for posttreatment data.

The pretreatment to posttreatment data for primary teachers in the experimental group allowed us to accept the null hypothesis from pretreatment to posttreatment at the $p < .05$ level. The obtained Wilcoxon T value was 11.5 and the critical T was 2.0. However, for the primary teachers in the comparison group, the hypothesis of no difference from pretreatment to posttreatment was rejected at $p < .05$. The obtained T value was 0.0. The data suggest that the primary level student teachers in the comparison group had higher SoC after treatment while those in the experimental group did not.

Similar analyses were carried out for intermediate teachers.

The null hypothesis between groups on pretreatment data was accepted with an obtained U value of 16, exceeding the $p<.05$ level. For intermediate teachers on posttreatment data the null hypothesis was also accepted with the obtained value of 16 exceeding the $p<.05$ level.

For the pretreatment to posttreatment data for intermediate teachers in the experimental group, the null hypothesis was rejected at $p<.05$ with a T value of 0.0. The intermediate level student teachers in the experimental group had higher SoC after treatment while the primary level student teachers did not. For intermediate teachers in the comparison group, the null hypothesis was accepted at the $p<.05$ level with an obtained T value of 4.0. A summary of the SoC analyses is in Table 6.

The other dependent variables, i.e., I/D ratio, revised I/D, Teacher/Student talk ratio, flexibility, teacher attitudes, and preparation adequacy, were analysed in a multivariate analysis of variance with groups and levels as the independent variables. The computer program, Multivariance, developed by Finn (1976) was used in the analysis. The scores for all of the participants on these variables are reported in Appendix J. The observed cell means are reported in Table 7 and the observed cell standard deviations in Table 8.

The data from the first administration of instruments and videotapes were used in an analysis of covariance procedure to equate the groups and levels. A null hypothesis of no association between dependent and independent variables was tested as part of the covariance procedure. The F value was 2.03, significant at the

Table 6

Summary of Stages of Concern Data Analyses

Null Hypothesis	Decision $p < .05$	Group with higher level
Groups		
H_o: There is no difference between groups on the pretreatment data.	reject	experimental
H_o: There is no difference between groups on the posttreatment data.	reject	experimental
H_o: There is no difference from pretreatment to posttreatment for the experimental group.	accept	
H_o: There is no difference from pretreatment to posttreatment for the comparison group.	accept	
Levels		
H_o: There is no difference between levels on the pretreatment data.	reject	primary
H_o: There is no difference between levels on the posttreatment data.	reject	primary
H_o: There is no difference from pretreatment to posttreatment for primary teachers.	accept	
H_o: There is no difference from pretreatment to posttreatment for intermediate teachers.	reject	higher in post
Primary		
H_o: There is no difference between groups for primary teachers on pretreatment data.	reject	experimental
H_o: There is no difference between groups for primary teachers on posttreatment data.	reject	experimental
H_o: There is no difference from pretreatment to posttreatment for primary teachers in the experimental group.	accept	
H_o: There is no difference from pretreatment to posttreatment for primary teachers in the comparison group.	reject	higher in post
Intermediate		
H_o: There is no difference between groups for intermediate teachers on pretreatment data.	accept	
H_o: There is no difference between groups for intermediate teachers on posttreatment data.	accept	
H_o: There is no difference from pretreatment to posttreatment for intermediate teachers in the experimental group.	reject	higher in post
H_o: There is no difference from pretreatment to posttreatment for intermediate teachers in the comparison group.	accept	

Table 7

Multivariate Analysis of Variance
Observed Cell Means

Cell	Pre-I/D ratio	Post-I/D ratio	Pre-revised I/D ratio	Post-revised I/D ratio	Pre-T/S talk ratio	Post-T/S talk ratio
Experimental primary	1.3684	1.4283	1.0119	2.1786	2.4606	2.5125
Experimental intermediate	0.8257	0.8196	1.2626	1.3584	3.4100	2.6009
Comparison primary	0.9975	0.9740	1.6405	1.2756	5.7125	5.5643
Comparison intermediate	0.7976	0.6761	1.0303	10.6400	3.5283	3.2676

Cell	Pre-flexibility ratio	Post-flexibility ratio	Pre-teacher attitudes (TAQ)	Post-teacher attitudes (TAQ)	Pre-perception of training (PAI)	Post-perception of training (PAI)
Experimental primary	9.0450	8.5154	43.3636	44.9091	123.3636	135.1818
Experimental intermediate	7.4390	9.0134	46.4286	48.0000	124.4286	136.2857
Comparison primary	7.8867	6.5723	43.3750	45.7500	128.3750	139.3750
Comparison intermediate	7.0779	5.7345	44.2857	46.7143	128.0000	118.4286

Table 8

Multivariate Analysis of Variance Observed Cell Standard Deviations

Cell	Pre-I/D ratio	Post-I/D ratio	Pre-revised I/D ratio	Post-revised I/D ratio	Pre-T/S talk ratio	Post-T/S talk ratio
Experimental primary	1.15825	0.66461	0.83550	1.87971	2.10359	2.17695
Experimental intermediate	0.46853	0.61553	2.01701	1.10175	2.53311	2.03301
Comparison primary	0.72410	1.29351	1.97750	1.28616	7.21136	5.38387
Comparison intermediate	0.71049	0.38364	0.90353	16.35859	1.40393	1.62620

Cell	Pre-flexibility ratio	Post-flexibility ratio	Pre-teacher attitudes (TAQ)	Post-teacher attitudes (TAQ)	Pre-perception of training (PAI)	Post-perception of training (PAI)
Experimental primary	2.07433	2.18739	4.10543	3.11302	28.75856	21.77989
Experimental intermediate	2.00776	2.21482	3.50510	3.10913	17.82187	12.95780
Comparison primary	1.82723	1.86285	3.02076	3.88219	23.59139	11.52559
Comparison intermediate	1.67574	1.45793	5.21901	3.86067	18.47521	27.14687

p .05 level.

Three multivariate hypotheses were tested: no difference between the two groups, no difference between the two levels, and no significant interaction of main effects.

The first null hypothesis, that of no differnce between the experimental and comparison groups, was not significant at $p < .05$. The overall MANOVA F with 6 and 15 degrees of freedom, was 1.74. The second hypothesis, that of no difference between primary and intermediate level teachers was also nonsignificant at $p < .05$. The overall MANOVA F value, with 6 and 15 degrees of freedom, was 1.52. The third hypothesis, that of no interaction between the two main effects, i.e., groups and levels, was also nonsignificant at the .05 level. The overall MANOVA F value was 0.69 with 6 and 18 degrees of freedom.

Post hoc analyses, while having been requested as part of the Multivariance program were not appropriate since the main effects and interaction were not significant. The data for the tests of the three multivariate hypotheses are in Table 9 for the groups hypothesis, in Table 10 for the level, and in Table 11 for the interaction. All three of the tests were not significant at $p < .05$. Also included in these Tables are the univariate F tests and discriminant functions for each dependent variable.

Discussion

In this section the data are discussed in two parts. First, the Stages of Concern data are discussed and then the multivariance

Table 9

Summary MANOVA Data
for Groups

F Ratio for Multivariate Test of Equality of Mean Vectors = 1.7473
D.F. 6 and 18 $p < 0.1673$

Variable	Hypothesis Mean Square	Univariate F	p less than	Stepdown F	p less than
1. Post I/D	0.40	0.69	0.41	0.69	0.41
2. Post Rev. I/D	32.40	0.59	0.44	0.62	0.43
3. Post T/S	5.21	1.28	0.26	0.77	0.38
4. Post Flexibility	31.10	8.78	0.01	7.67	0.01
5. Post Attitudes	0.91	0.08	0.77	0.71	0.40
6. Post Preparation	4.86	0.17	0.68	0.05	0.81

Degrees of Freedom = 1 and 23
6 covariates eliminated

Discriminant Analysis

Variance of Canonical Variate 1 = 0.5824 Percent of Canonical Variation = 100

Discriminant Function Coefficients

Variable	Raw Coefficient	Standardized
1. Post I/D	0.2959	0.2252
2. Post Rev. I/D	-0.0469	-0.3464
3. Post T/S	-0.2367	-0.4778
4. Post Flex.	0.4683	0.8812
5. Post Attitudes	-0.1021	-0.3447
6. Post Preparation	-0.0062	-0.1118

Table 10

Summary MANOVA Data for Levels

F Ratio for Multivariate Test of Equality of Mean Vectors = 1.5202
D.F. 6 and 18 $p < 0.2278$

Variable	Hypothesis Mean Square	Univariate F	p less than	Stepdown F	p less than
1. Post I/D	0.72	1.25	0.27	1.25	0.27
2. Post Rev. I/D	125.04	2.29	0.14	2.25	0.14
3. Post T/S	7.11	1.74	0.19	2.84	0.10
4. Post Flexibility	1.11	0.31	0.58	0.22	0.54
5. Post Attitudes	23.66	2.07	0.16	1.39	0.25
6. Post Preparation	803.36	2.52	0.12	0.92	0.34

Degrees of Freedom = 1 and 23
6 covariates eliminated

Discriminant Analysis

Variance of Canonical Variate 1 = 0.5067 Percent of Canonical Variation = 100

Discriminant Function Coefficients

Variable	Raw Coefficient	Standardized
1. Post I/D	0.9138	0.6952
2. Post Rev. I/D	-0.0350	-0.2584
3. Post T/S	0.2648	0.5346
4. Post Flex.	0.0939	0.1768
5. Post Attitudes	-0.1468	-0.4956
6. Post Preparation	0.0254	0.4544

Table 11

Summary MANOVA Data for the Interaction of Groups and Levels

F Ratio for Multivariate Test of Equality of Mean Vectors = 0.6927
D.F. 6 and 18 p 0.6567

Variable	Hypothesis Mean Square	Univariate F	p less than	Stepdown F	p less than
1. Post I/D	0.02	0.03	0.84	0.03	0.84
2. Post Rev. I/D	146.13	2.68	0.11	2.60	0.12
3. Post T/S	0.39	0.09	0.75	0.05	0.82
4. Post Flexibility	4.69	1.32	0.26	0.91	0.35
5. Post Attitudes	6.33	0.55	0.46	0.19	0.70
6. Post Preparation	954.55	2.99	0.09	0.72	0.40

Degrees of Freedom = 1 and 23
6 covariates eliminated

Discriminant Analysis

Variance of Canonical Variate 1 = 0.2309 Percent of Canonical Variation = 100

Discriminant Function Coefficients

Variable	Raw Coefficient	Standardized
1. Post I/D	-0.3333	-0.2536
2. Post Rev. I/D	0.0455	0.3360
3. Post T/S	-0.1472	-0.2973
4. Post Flex.	-0.2389	-0.4495
5. Post Attitudes	-0.0630	-0.2128
6. Post Preparation	-0.0302	-0.5407

analysis of variance. It was the author's intent to analyse all data in the MANOVA framework. However, this method of analysis was inappropriate with ordinal level data.

The SoC data were summarized in Table 6. These data suggested that, although there were significant differences between groups, levels, and levels within groups on the posttreatment data, there were also significant differences in the pretreatment data, with the exception of the intermediate level teachers who did not differ on pretreatment or posttreatment data. This was probably due to the fact that the sample was not randomly assigned to treatment. The pretreatment to posttreatment data presented a different picture. The null hypotheses for these data for the experimental and comparison groups were accepted. Therefore, while there were significant differences on the pretreatment and posttreatment data, there were no significant differences from pretreatment to posttreatment. For the levels variable, there was a significant difference from pretreatment to posttreatment for the intermediate level teachers, i.e., they had higher SoC after treatment, but not for the primary level student teachers.

Data analysis was carried one step further in order to probe this result. For the primary teachers, there was no significant difference from pretreatment to posttreatment in the experimental group, but there was in the comparison group. The comparison group had higher SoC after treatment. The reverse was true for the intermediate student teachers, i.e., there was a significant difference from pretreatment to posttreatment for those in the experimental group but not for those in the comparison group. The experimental group intermediate student teachers had higher SoC after treatment.

The data for the intermediate level and for the levels within groups hypotheses with significant differences are presented in histogram form in Figures 1, 2, and 3. These figures illustrate the shift in SoC for the different levels and levels within groups. All three figures show a shift from lower to higher SoC from pretreatment to posttreatment. There is a large decrease in the frequency of SoC 0 in all three cases, as would be expected as students became more familiar with the teaching experience. Also, there is more of a spreading out across the other SoC with a general decrease in the lower SoC from pretreatment to posttreatment and an increase in the higher SoC indicating a shift from self concerns to concerns about the curriculum and students.

However, the test of any differences between groups, levels, or levels within groups, using pretreatment data in the analysis of covariance design or any other method of equating groups was inappropriate for these data.

The observed cell means and standard deviations for the MANOVA data are located in Tables 7 and 8, respectively. The I/D ratio means show that the experimental primary student teachers used more indirect teacher behaviors than direct on both pretreatment and posttreatment data. This was almost true for the primary comparison student teachers also, while the intermediate teachers in both groups used more direct teacher behaviors on both pretreatment and

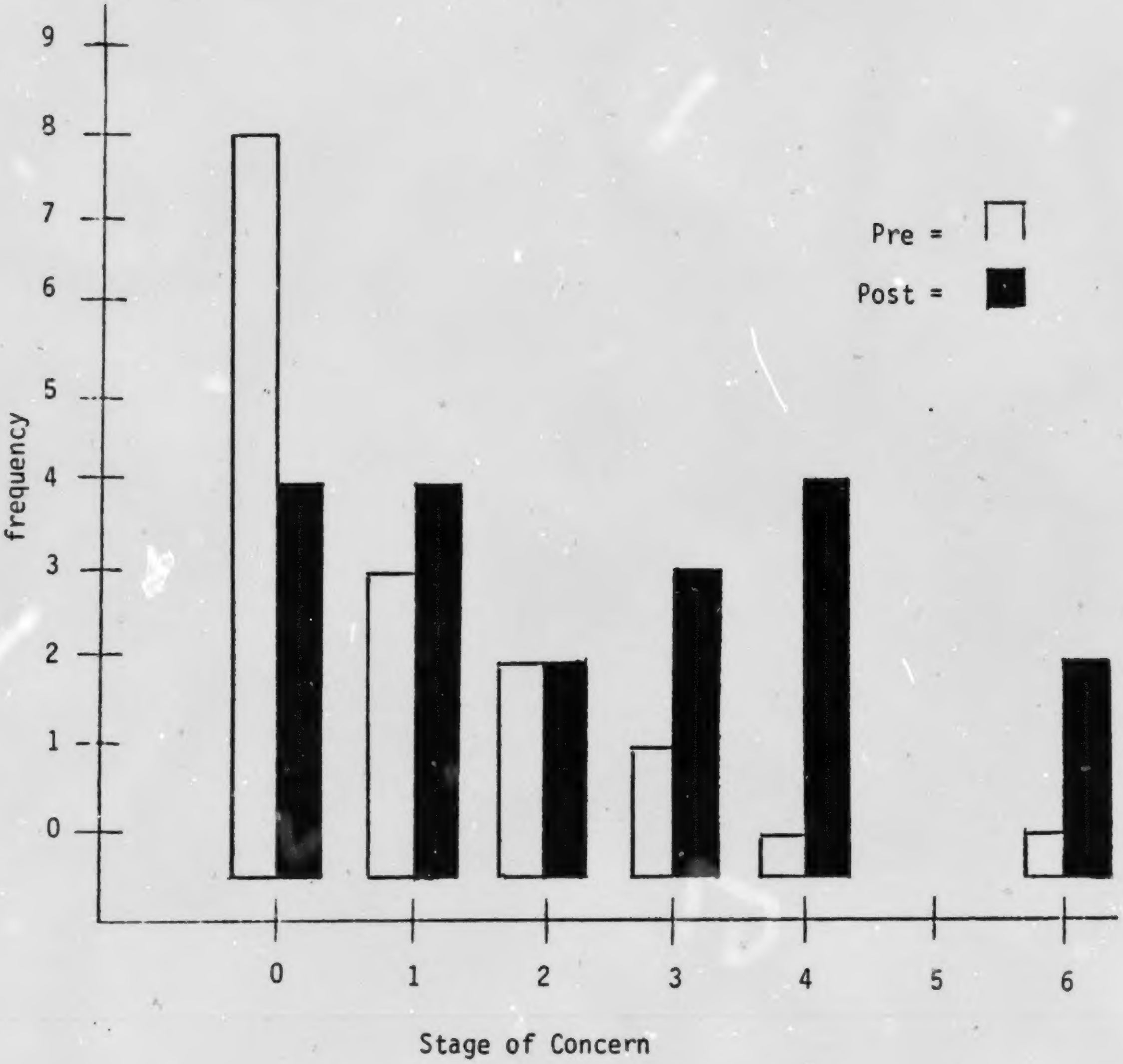


Figure 1. Stages of Concern for intermediate student teachers from pretreatment to posttreatment.

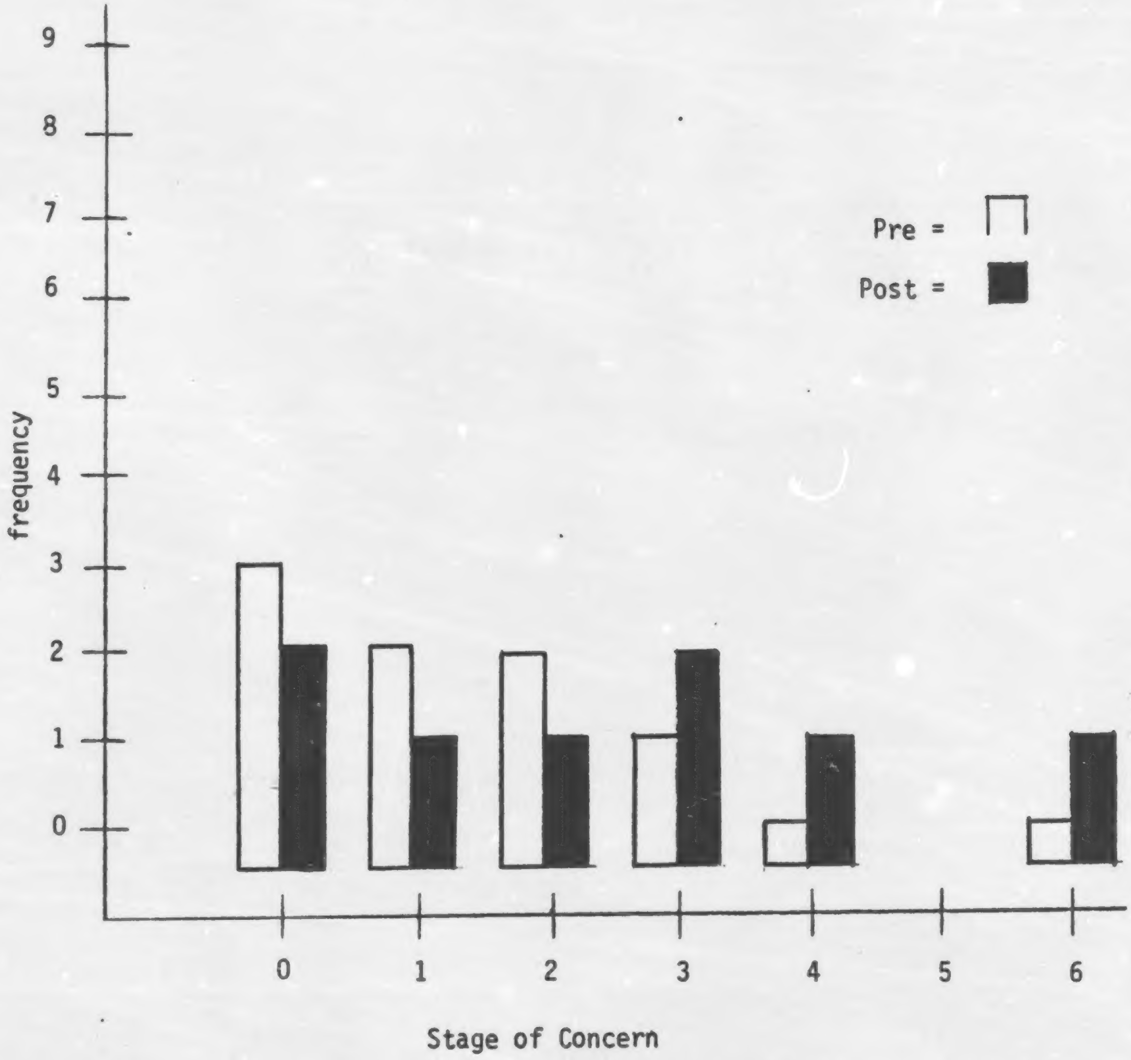


Figure 2. Stages of Concern for primary student teachers in the comparison group from pretreatment to posttreatment.

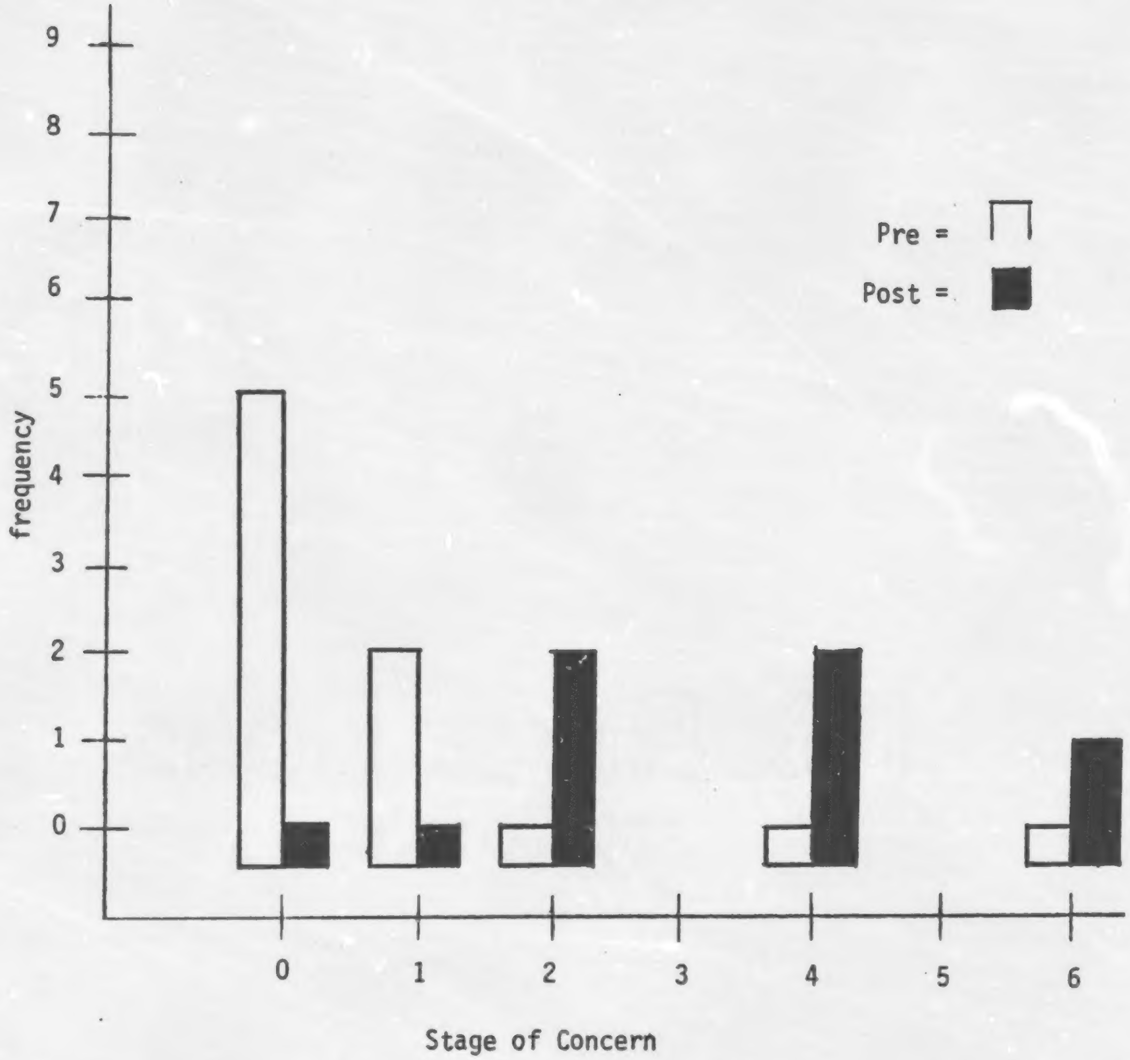


Figure 3. Stages of Concern for intermediate student teachers in the experimental group from pretreatment to posttreatment.

posttreatment data. For the motivation/control behaviors, i.e., the revised I/D ratio, all the groups utilized more indirect than direct motivation/control behaviors. For the Teacher/Student talk ratio all the groups used at least twice as much teacher talk, with the primary comparison group student teachers using over five times more teacher talk. On the flexibility ratio, it appeared, in the posttreatment data, that the experimental group student teachers were more flexible than comparison group participants. Looking at these data from pretreatment to posttreatment, the comparison group decreased in the variety of teacher behaviors employed while the intermediate experimental group increased and primary experimental teachers decreased slightly. However, these changes were not statistically significant.

The Teacher Attitude Questionnaire data indicated very little difference between any of the groups and only slight increases in the groups from pretreatment to posttreatment. However, all group means are relatively high, suggesting that all the groups had more affective, humanistic teaching philosophies.

The Preparation Adequacy Inventory data indicated that experimental group student teachers and primary comparison group participants perceived their preservice preparation more favorable at the conclusion of the student teaching experience than prior to it, while intermediate comparison group participants perceived their preservice training less favorably from pretreatment to posttreatment.

The MANOVA data were analysed using pretreatment data as covariates in order to adjust for differences between groups and levels on the six dependent variables. The hypothesis of no association between independent and dependent variables was rejected. This result supports the appropriateness of using the analysis of covariance procedure (Elashoff, 1969).

The multivariate F tests are in Table 9, 10, and 11. While none of these ratios were significant, one of the univariate F ratios, i.e., for the dependent variable, flexibility, was significant for the groups independent variable. While this suggests a significant difference between the experimental and comparison groups for this dependent variable, within the overall MANOVA design the difference was not truly significant and was probably due to sampling bias.

In summary, it appeared that both the groups and the levels were different at the beginning of treatment and at the conclusion on the SoC data and that only intermediate level student teachers, specifically those in the experimental group and primary student teachers in the comparison group changed their SoC significantly from pretreatment to posttreatment, i.e., they were higher after treatment. The MANOVA data suggest that for Indirect/Direct teacher behaviors, Indirect/Direct motivation/control behaviors, flexibility, attitudes, and perception of preparation adequacy, there were no significant differences between the experimental and comparison groups, between primary and intermediate levels, and no significant interaction between groups and levels.

CHAPTER V

Conclusions, Limitations, Implications, and Recommendations

Conclusions

The first two null hypotheses, i.e., no difference between the groups and between the grade levels in the Stages of Concern for the participants, were accepted in part. For the group differences, the hypothesis was rejected for pretreatment data and for posttreatment data, but was accepted for pretreatment to posttreatment, i.e., over time. This was also true, to a certain extent, for the grade levels variable. However, primary level student teachers in the comparison group and intermediate level student teachers in the experimental group changed concerns significantly over time. In fact, there was a consistent and statistically significant increase in their Stages of Concern from pretreatment to posttreatment. This result suggested that for different grade levels, different methods of supervision were more appropriate, with respect to the concerns of student teachers, rather than the same method of supervision for everyone.

The remaining six null hypotheses, i.e., those involving dependent variables in the multivariate analysis of variance were all accepted. Based on this result, the author concluded that there was no significant differences in the dependent variables between the two methods of student teaching supervision studied in this research. However, it was interesting to note that both groups and levels had relatively high ratios of indirect to direct teacher and motivation/control behaviors and that both groups were affectively and humanistically oriented from the start.

The experimental group appeared to be more flexible than the comparison group after treatment, but the difference was not statistically significant. Both groups and grade levels viewed their preservice training as adequate, as reflected by scores on the Preparation Adequacy Inventory. There was a nonsignificant increase in scores for this dimension from pretreatment to posttreatment with the exception of one group, the intermediate participants in the comparison group, who showed a decrease, also nonsignificant.

Limitations

There were some serious limitations to the present study. First, random selection procedures were not possible due to established procedures for matching cooperating teachers and student teachers. This lack of randomization seriously limited the generalizability of the results of this project. Randomization is also a prerequisite for analysis of covariance procedures. Therefore, the assumption of randomness was violated, resulting in two possibilities. First, there may still be some bias due to a variable that was not used in this project and second, when the covariate "shows real differences among groups, covariance adjustments may involve extrapolation" (Elashoff, 1969). The Stages of Concern data revealed that the groups and grade levels were significantly different at the beginning, therefore adding to this problem of interpretation due to the lack of randomization.

Another serious limitation was the small sample size, which limited the validity of the findings. Sample mortality prior to the actual start of treatment resulted in the loss of approximately 25% of the participants. This was due primarily to two causes: several subjects refused to participate and several cooperating teachers refused to participate. This lowered the sample size to 33 participants, 18 in the experimental group and 15 in the comparison group. Cell size in the MANOVA was as small as seven, and in one of the SoC analyses, i.e., the intermediate level student teachers in the experimental group, the sample size was five. Although there was a significant difference between pretreatment to posttreatment SoC for these participants, the validity of the results is questionable with such a small sample.

The third limitation was the number of university supervisors who participated in the study. There were three in the comparison group and two in the experimental group, one of whom only supervised one student teacher. This factor may have limited the validity of the results since personality differences may have resulted in some bias, especially in a situation such as this where close interaction between supervisor and student teacher was critical, and the basis for the entire project. One final conclusion was that the role of the university supervisor as a change agent appears to be supported, at least insofar as teacher concerns apply, and this author recommends utilizing supervisors as part of the teacher training program.

Implications

The implications are based on the results of the data analyses presented in chapter three. They will be discussed in light of the limitations described in the previous section.

The results suggested that the supervision programs may have had differential effects for different grade levels in the case of teacher concerns. There was literature which suggested that instead of providing teacher training programs for the elementary school as a whole, grade levels should be treated autonomously and different programs provided for each. While the teacher behaviors and attitudes variables did not support this implication, the concerns of teachers are important if these teachers are going to be able to adapt to different situations when they enter the teaching field. In the present case, it appeared that the experimental program was more effective in modifying the Stages of Concern with intermediate level student teachers while the traditional model was more effective with primary level student teachers although in both cases the sample size was small, thus limiting the validity of this conclusion. Therefore, different supervisory programs for each grade level should be considered in a comprehensive teacher education program.

The concept of flexibility had some interesting implications in the present research. In the review of the literature, there were several studies supporting the view that there was a positive relationship between teaching effectiveness and the flexibility, i.e., use of a variety of materials, behaviors, and adaptability, employed in the classroom. The experimental program provided student teachers with immediate feedback of their classroom performance. An intended outcome of this procedure was that if an individual was using one or a limited variety of teaching behaviors in class, this information would be fed back to them and they were free to decide whether to try other techniques and increase their repertoire of teaching behaviors in order to provide more of a variety of experiences for children. There was an increase in the flexibility of experimental group student teachers, but the increase was not statistically significant within the overall MANOVA. However, further research is needed in this area.

There is also the possibility that in spite of the limitations, there really was no significant difference between the two modes of supervision evaluated in this research for those dependent variables considered. That is, if it had been possible to use randomization procedures for selecting and assigning participants and supervisors, and if the cell sizes were larger, there would still have been no significant differences.

Some of the literature reviewed suggested that no significant changes occurred with the use of various types of supervisory feedback (Balzer, Evens, and Blosser, 1973; Esquivel, 1976; Yulo, 1967), while others concluded that changes such as altering humanistic behavior (Walencik and Tuckman, 1974) and using more indirect teaching behaviors (Moskowitz, 1967) did occur. This research would support the view that no change occurred for those dependent variables studied.

In most of the literature concerning the use of interaction analysis as a means of providing feedback of observational data, it was the student teachers themselves who were trained in the use of the instrument and not their university supervisors. With the exception of videotaping programs, not much research has been conducted dealing with training university supervisors in the use of observation systems for supervising their student teachers. If the results of this study are assumed valid, the argument for training supervisors in the use of these techniques is not supported. However, there may be other alternatives. Perhaps, the cooperating teachers should be trained in the use of the IAST and TPOR and provide immediate feedback. Perhaps, as Balzer, Evens, and Blosser (1973) suggested, it may be the combination of supervisory personnel utilizing different modes of feedback for supervision that would produce significant differences. There is certainly a need for further research to test these hypotheses.

The limitations of the study posed another problem. It could have been due to the limitations that the null hypotheses were accepted, when, in fact, true differences may have existed. That is, a type II error, accepting a hypothesis that should have been rejected, may have occurred. This is a problem of design and the best solution would be to increase the sample size.

Recommendations

This project was intended to serve as pilot research in order to develop a supervisory program compatible with the teacher training program at the University of Kansas. The role of the university student teacher supervisor has been questioned as being a necessary component in the program. This research attempted to better define the role of the supervisor and develop a supervisor training program in order to promote professional growth in the student teachers. While the success of the program, at least compared to the one currently in use, did not appear to be significantly better, the present study has raised several questions for further research.

First, it is suggested that the study be replicated under the following conditions. There should be at least 50 student teachers in each group and the participants should be randomly assigned to treatment. In addition there should be at least 10 supervisors for each group and they should be randomly assigned to treatment. This would certainly lend more credence to the internal and external validity of the results. The author felt that the supervisory program developed in this project was valid for the purposes intended, and this was supported by the fact that it did as well as the one already in use. In some respects it appeared to do better, but not significantly so. Therefore, by increasing the number of participants in each group and the number of supervisors, and using random selection procedures for assigning individuals and supervisors to groups, significant differences may appear, supporting the use of the experimental program.

If, under the conditions just described, no significant differences occur, other strategies could be developed and implemented. For example, cooperating teachers could be trained in the use of the IAST and TPOR. They would then be the primary source of feedback to their student teachers. Or perhaps, the student teachers themselves should be trained. Previous research (Moskowitz, 1967) has indicated that student teachers trained in interaction analysis used more indirect behaviors. A comaprison of these different types of feedback, i.e., university supervisor trained in using the IAST, cooperating teachers trained in using the IAST, and student teachers trained in using that instrument should also be done to see which, if any, produces significant changes.

There are several other areas of related research that are relevant to the present study. A study of the relationship between the Stages of Concern and the other dependent variables using multiple regression analyses would aid in describing the contribution that teacher behaviors and attitudes make to teacher concerns.

The author also recommends further research on flexibility as a desirable characteristic for effective teaching. What are the teacher characteristics that promote flexibility in the classroom? Using the data from the present study, the flexibility ratio could serve as the criterion variable in a multiple regression analysis to describe the relative contribution of the other dependent variables to this desirable teacher characteristic.

Another area of exploration relevant to the current discussion is the correlation between teaching behaviors, as one group of variables, and concerns and attitudes as another set. Canonical correlation analyses could be done to explain the relationship between these two sets of variables and the contribution of each variable to the relationship.

A final area of interest that involves interaction analysis data similar to that described in this study is called macroanalysis, as defined by Shymansky et al. (1975). This involves looking at patterns of behaviors consisting of more than two codes. Macroanalysis can analyse coded data for patterns of three, four, or five codes. A study using the same dependent variables as this one, but using macroanalytic procedures for analysing the codes might reveal some interesting results.

List of References

Anderson, H.H. & Brewer, H.M. Studies of teachers' classroom personalities I: dominative and socially integrative behavior of kindergarten teachers. *Applied Psychology Monographs*, *6* , 1945.

Anderson, H.H. & Brewer, H.M. Studies of teachers' classroom personalities II: effects of teachers' dominative and integrative contacts on children's classroom behavior. *Applied Psychology Monographs*, *8*, 1946.

Baker, E. Formative evaluation of instruction. In W.J. Popham (Ed.), *Evaluation in Education: Current Applications*. Berkeley: McCutchan, 1974.

Balzer, A.L., Evens, T.P., & Blosser, P.E. *A Review of the research on teacher behavior relating to science eduation*. Columbus, Ohio: Association for the Education of Teachers in Science, 1973.

Berliner, D.C. Impediments to measuring teacher effectiveness. In G.D. Borich, *The Appraisal of teaching: concepts and process*. Reading, Mass.: Addison-Wesley, 1977.

Blosser, P.E. *Some alternative methods of estimating reliability of classroom observation instruments*. Paper presented at the meeting of the National Association for Research in Science Teaching, Los Angeles, 1975.

Borich, G.D. *The appraisal of teaching: concepts and process*. Reading, Mass.: Addison-Wesley, 1977.

Brown, B.B. *Handbook for teacher practices observation record*. Unpublished manuscript, University of Florida, Gainesville, undated.

Campbell, D.T., & Stanley, J.C. *Experimental and quasi-experimental designs for research*. Chicago: Rand-McNally, 1963.

Dean, K. *Supervision of student teachers: how adequate?* 1971. (ERIC Document Reproducation Service No. ED 079 256)

Dieter, D. *How educators of teachers of science evaluate biology teachers*. 1973. (ERIC Document Reproducation Service No. ED 083 228)

Dixon, B.G. & Seiferth, B. *The changing role of the university supervisor of student teachers*. 1974. (ERIC Document Reproduction Service No. ED 090 155)

Elashoff, J.D. Analysis of covariance: A delicate instrument. *American Educational Research Journal*, 1969, *6*(3), 383-401.

Esquivel, J.M. *Effects of feedback modes on questioning strategies of preservice teachers involved in SCIS microteaching*. Unpublished doctoral dissertation, University of Kansas, 1976.

Finn, J.D. *Multivariance: Univariate and multivariate analysis of variance, covariance, and regression* (User's guide). Chicago: National Educational Resources, 1976.

Flanders, N.A. *Interaction analysis in the classroom: A manual for observers*. Ann Arbor: University of Michigan, 1960.

Flanders, N.A. *Analysing teacher behavior*. Reading, Mass.: Addison-Wesley, 1970.

Flanders, N.A. & Simon, A. Teacher effectiveness. In R.L. Ebel (Ed.), *Encyclopedia of Educational Research* (4th ed.). New York: MacMillan, 1969.

George, A. Personal communication, June, 1977.

Glass, G.V., Peckham, P.D., & Sanders, J.R. Consequences of failure to meet assumptions underlying the fixed effects analyses of variance and covariance. *Review of Educational Research*, 1972, *42* (3), 237-288.

Goggin, W.F. Teacher training instructors and the concept of humaneness. *Dissertation Abstracts International*, 1972, *32* (8), 4326A.

Goldenberg, R. *Pupil control ideology and teacher influence in the classroom*. 1971. (ERIC Document Reproduction Service No. ED 048 099)

Hall, G.E. *A comparison of the teaching behaviors of second grade teachers teaching Science - A Process Approach with second grade teachers not teaching a recently developed science curriculum*. Unpublished doctoral dissertation, Syracuse University, 1968.

Hall, G.E. *Analysis of teaching behavior*. Austin, Texas: The Research and Development Center for Teacher Education, University of Texas, 1969.

Hall, G.E. *Analysis of teaching behavior: Instructional module*. Austin, Texas: The Research and Development Center for Teacher Education, University of Texas, 1971.

Hall, G.E. *A manual for users of the IAST V. 2: A system of interaction analysis*. Austin, Texas: The Research and

Development Center for Teacher Education, University of Texas, 1972.

Hall, G.E. Computer processing and feedback of interaction analysis data for teachers. Austin, Texas: The Research and Development Center for Teacher Education, University of Texas, 1973.

Hall, G.E. The effects of change on teachers and professors--theories, research and implications for decision makers. Paper presented at the National Invitational Conference on Research on Teacher Effects: An Examination by Policy Makers and Researchers, Austin, Texas, 1975.

Hall, G.E., Loucks, S., Rutherford, W., & Newlove, B. Levels of use of the innovation: A framework for analysing innovation adoption. Journal of Teacher Education, 1975, 26, 52-56.

Harris, W. Videotaping for student teachers? 1973. (ERIC Document Reproduction Service No. ED 098 130)

Harty, H. & Ritz, W.G. A proposed model for the supervision of student teachers. Bloomington, Indiana: Division of Teacher Education, Indiana University at Bloomington, 1974.

Harvey, O.J. Teachers beliefs, classroom atmosphere, and student behavior. 1966. (ERIC Document Reproduction Service No. ED 011 888)

Hawthorne, R.D. A report of a formative evaluation study of the Kent State University teacher education center program. 1974. (ERIC Document Reproduction Service No. ED 100872)

Irwin, R.S. & Butts, D.P. A comparative study of the effect of certain factors on the teaching behavior of preservice elementary teachers of science. Journal of Research in Science Teaching, 1972, 9, 75-81.

James, H.E. Effects of three supervisory methods upon the development of a teaching strategy among science student teachers. Dissertation Abstracts International, 1970, 31 (6), 2774A.

Johnson, J.A. The role of the college student teacher supervisor in inservice teacher education. 1974. (ERIC Document Reproduction Service No. ED 096 293.

Laney, R.S. Relationships between university teachers' interpersonal orientation and their classroom interaction patterns. Dissertation Abstracts International, 1970, 31 (2), 619A-620A.

LaShier, W.S. Supervisory feedback to elementary school teachers of science. Unpublished grant proposal submitted to Research Administration, University of Kansas, 1977.

Love, W.E. A formative evaluation of Individualized Science, an innovative instructional program. 1973. (ERIC Document Reproduction Service No. ED 074 145)

Matthews, C.C. Classroom verbal behavior of science student teachers and their cooperating teachers. Journal of Research in Science Teaching, 1967, 5, 193-201.

Medley, D.M. & Mitzel, H. Measuring classroom behavior by systematic observation. In N.L. Gage (Ed.), Handbook of Research on Teaching. Chicago: Rand-McNally, 1963.

Moon, T.C. A study of verbal behavior patterns in primary grade classrooms during science activities. Journal of Research in Science Teaching, 1971, 8, 171-177.

Morris, J.R. The effects of the university supervisor on the performance and adjustment of student teachers. Journal of Educational Research, 1974, 67 (8), 358-362.

Morrison, V.B. The relationship of student teacher performance and pupil performance to supervisory and pupil merit ratings (Doctoral dissertation, University of Michigan). Ann Arbor, Michigan: University Microfilms No. 62-2769.

Moskowitz, G. The attitudes and teaching patterns of cooperating teachers and student teachers trained in interaction analysis. In E.J. Amidon & J.B. Hough (Eds.), Interaction Analysis: Theory, Research, and Application. Reading, Mass.: Addison-Wesley, 1967.

Neal, C.D., Kraft, L.E., & Knacht, C.R. Reasons for college supervision of the student teaching program. Journal of Teacher Education, 1967, 18 (1), 24-27.

Nickel, J.M. A study of the relationship between student teachers and cooperating teachers as determined by interaction analysis (Doctoral dissertation, University of Kansas, 1971). Ann Arbor, Michigan: University Microfilms, No. 71-13, 399.

Nie, H.N., Hull, C.H. Jenkins, J.G., Steinbrenner, K., & Bent, D.H. Statistical package for the social sciences (2nd ed.). New York: McGraw-Hill, 1975.

Olmo, B. Interaction analysis for teacher preparation. 1975. (ERIC Document Reproduction Service No. ED 087 758)

Parker, J.C. & Rubin, L.J. *Process as content: Curriculum design and the application of knowledge*. Chicago: Rand-McNally, 1966.

Poynor, L.H. & Wetherold, P. *Instrumentation for the evaluation of teaching project*. Austin, Texas: The Research and Development Center for Teacher Education, University of Texas, 1976.

Quimby, R. The impact of videotaping as one means of analysing student teaching performance at St. Mary's College. *Teacher Educator*, 1072, *8* (1), 31-36.

Rexford, G.E. The relationship between pupil control ideology and observed verbal behavior of selected secondary teachers. *Dissertation Abstracts International*, 1971, *32* (1), 103A.

Scott, W.A. Reliability of content analysis: The case for nominal scale coding. *Public Opinion Quarterly*, 1955, *19*, 321-325.

Sherman, T.M. & Winstead, J.C. *A formative approach to student evaluation of instruction*. 1974. (ERIC Document Reproduction Service No. ED 088 954)

Shymansky, J.A., Penick, J., & Wortman, J.D. *Technical report 12: A computer program designed to identify behavior patterns in observational data*. Iowa City, Iowa: Science Education Center, University of Iowa, 1977.

Siegel, S. *Nonparametric statistics for the behavioral sciences*. New York: McGraw-Hill, 1956.

Simon, A. & Boyer, E.G. *Mirrors for behavior: An anthology of observation instruments*. Philadelphia: Research for Better Schools, Inc., 1968.

Stallings, J. How instructional processes relate to child outcomes. In G.D. Borich, *The appraisal of teaching: concepts and process*, Reading, Mass.: Addison- Wesley, 1977.

Tatsuoka, M.M. *Multivariate analysis: Techniques for educational and psychological research*. New York: John Wiley and Sons, 1971.

Thomas, E.S. Some new techniques for studying social behavior. *Child Developmental Monographs*, 1929, *1*.

Walencik, V.J. & Tuckman, B.W. *The effectiveness of feedback for changing student teacher's humanistic behavior*. 1974. (ERIC Document Reproduction Service No. ED 088 830)

Wight, A.R., Doxsey, I.R., & Mathiesen, R. *Measurement of affect and the humanizing of instruction part II: Instrument development and use*. Final report of the Interstate Educational

Resource Service Center Affective Education Project, Salt Lake City, Utah, undated.

Wilbur, P.H., & Gooding, C.T. Attitude changes in student teachers as a function of the type of student teaching experience. 1973. (ERIC Document Reproduction Service No. ED 083 132)

Withall, J. The development of a technique for the measurement of social-emotional climate in classrooms. Journal of Experimental Education, 1949, 17, 347-361.

Yulo, R.J. An exploration of the Flanders system of interaction analysis as a supervisory device with science teachers. 1965. (ERIC Document Reproduction Service No. ED 023 574)

Appendix A

Instrument for the Analysis of Science Teaching
Base and V.2 Categories and Matrix

IAST Base

TEACHER

1. Accept feelings: Recognizes and identifies with feelings of students (empathetic), non-evaluative encouragement or joking positive response.

2. Praise: A positive value judgment.

3. Acceptance of student's statements: A restatement of the student's statement, either written on the board or verbal. This category would also include short, non-evaluative confirmation such as "okay," "all right."

4. Question: All questions which require a student response.

5. Direction: Giving directions and procedures; telling the students how to do something. This requires an immediate student response or behavior.

6. Initiate substantive information: Lecturing, giveing facts, calculating, including writing new information on the board, and review information would be included in this category.

7. Justification or authority: Disciplinary action and criticism of a student's behavior would be included in this category.

8. Teacher controlled silence: Periods of silence which would include teacher demonstration, or a teacher examining her notes would be included under this category.

STUDENT

9. Student statements: This would include all student statements that are not questions.

10. Student questions: Questions asked by the students of one another or of the teacher would be placed in this category.

11. Affective response: Student responses that reflect student emotions or feelings about a certain topic.

12. Student activity: This would include activity such as students working in workbooks, reading silently to themselves or working with scientific apparatus, etc.

---

13. Division of student-to-student interaction: A mark for the separation between two students' interactions.

14. Nonfunctional behavior: Behavior without direction or purpose where no effective instruction is occurring.

TEACHER

1. Accept feelings:

Recognizes and identifies with feelings of students (empathetic), non-evaluative encouragement or joking, positive affective response.

2. Praise:

A positive value judgment about individual students or the whole class.

3. Acceptance of student's statements:

R Restatement of student's statements. This includes limited expansion of a student's statement, clarification of a student's ideas, the restating of the idea of a student, either verbal or written on the board.

Q Questions student's statement inducing the student to clarify or expand his original statement or idea.

S Gives short non-evaluative confirmation--"yes", "no", "okay", "all right"--a short response accepting student's ideas with no value judgment implied; no expansion or clarification of student's statement.

4. Question:

C Closed - a narrow, specific, channeled question requiring a specific student response; requiring application of simple or complex skills to a convergent, memoritive, or cognitive situation.

O Open - a broad question providing space for the student to be original in his response; a divergent or evaluative statement; "think" type question.

5. Direction:

P Giving directions and procedures, telling the students how to do substantive behaviors. This would require an immediate student response or behavior.

M Managerial directions not dealing directly with content of the lesson, still requiring immediate student response.

6. Provide substantive information:

L Lecturing, facts, new information, calculations, etc., including writing new information on the board.

P Previous information; information presented from a previous class period.

R Reading aloud, e.g., from a textbook, teacher's commentary, etc.

TEACHER

7. Criticizes or rejects student's ideas or behaviors:

Self justification and disciplinary statements that may be critical in a defensive manner and negative value response to a student's idea, or establishing authority.

8. Teacher controlled silence:

D Teacher demonstration--a demonstration in front of the class while there is no verbal behavior.
C Controlled silence.
L Looking at notes or lesson plan.
E Preparing for and distributing material.

STUDENT

9. Student statements:

C Closed - student's statements that are cognitive, memoritive or convergent in thought.
O Open - student's statements which are divergent or evaluative in thought.
R Reading aloud - students reading from written material such as a textbook.

10. Student questions:

S Substantive   O Open
P Procedural   C Closed

11. Affective response:

P Positive affective response
N Negative affective response

12. Student activity:

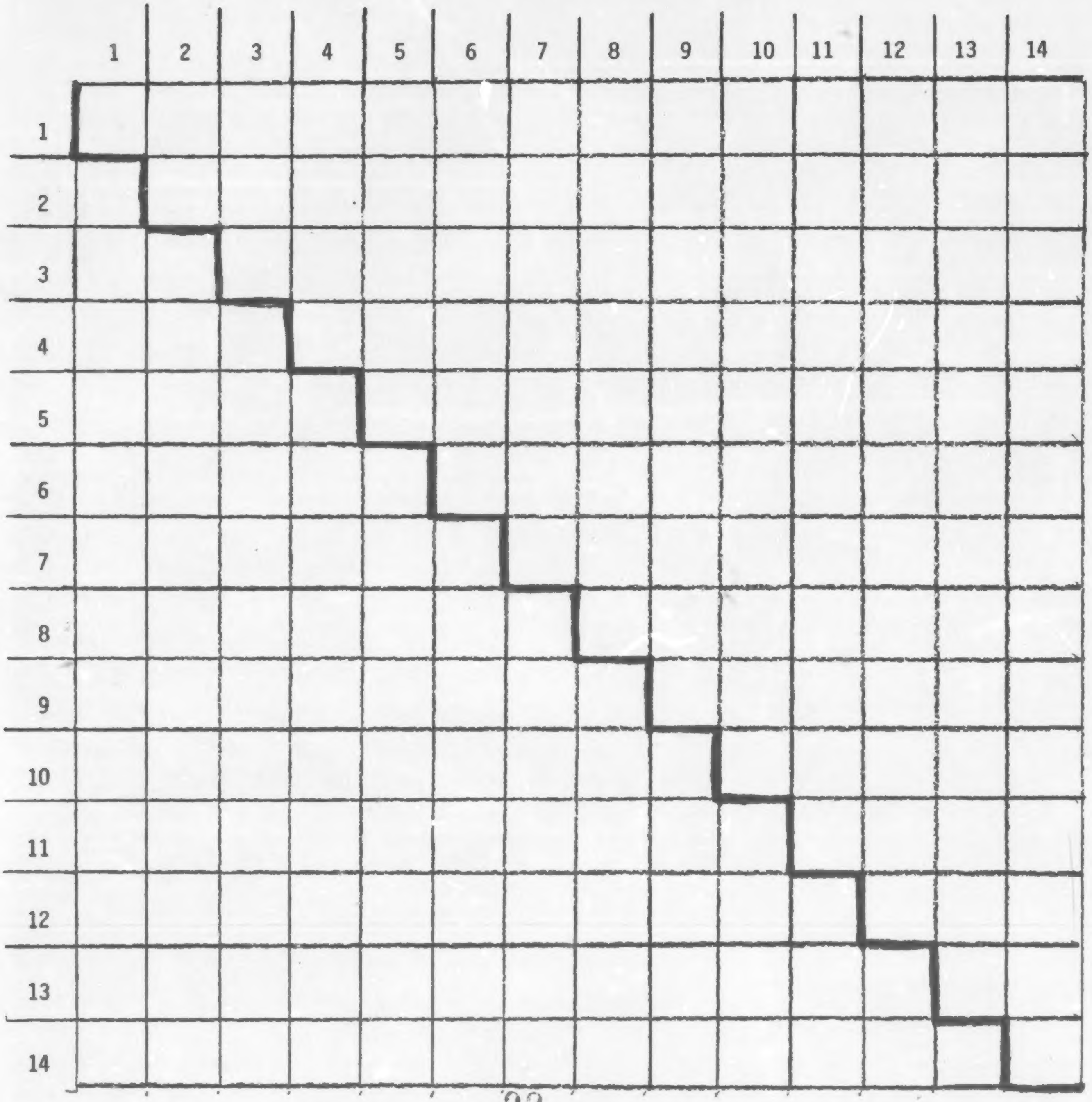
O Overt activity: individual students raising their hands, non-verbal lab activity, and students manipulating materials.
C Covert activity: internal behavior such as silent reading; this activity must be purposeful.
G Group overt activity: where the class is sub-divided into two or more groups and working with manipulative materials.
X Class (group) verbal response.

---

13. Division of student-to-student interaction:

A mark for the separation of talk between two students interacting. (This category has no time dimension.)

The IAST Matrix



	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														

Appendix B

Scott's Reliability Coefficient

Scott's Reliability Coefficient

Scott's Reliability Coefficient formula:

$$\pi = \frac{P_o - P_e}{1 - P_e}$$

P_o = the proportion of agreement

$P_e = \sum_{i=1}^{k} P_i^{\,2}$ = the proportion expected by chance, which is found by squaring the proportion of tallies in each category and summing over all categories.

Scott's Coefficient π ranges from 0, indicating no agreement between the raters, to 1.00, for perfect agreement between raters.

Example of computing π :

Category	Rater 1 frequency	Rater 1 prop.	Rater 2 frequency	Rater 2 prop.	frequency of agreement
1	0	.0000	0	.0000	0
2	2	.0115	1	.0074	1
3	16	.0919	11	.0808	11
4	51	.2931	56	.4118	51
5	18	.1034	13	.0956	13
6	28	.1609	12	.0882	12
7	2	.0115	4	.0294	2
8	2	.0115	0	.0000	0
9	30	.1724	27	.1985	27
10	0	.0000	1	.0074	0
11	1	.0057	0	.0000	0
12	23	.1322	10	.0735	0
13	0	.0000	0	.0000	0
14	1	.0057	1	.0074	1
	Σ=174		Σ=136		Σ=128

P_0 = 128/155 = .8258

$$P_e = \left(\frac{.0115+.0074}{2} + \frac{.0910+.0808}{2} + \dots \frac{.0057+.0074}{2}\right)^2 = .2027$$

$$\pi = \frac{.8258-.2027}{1.00-.2027} = .7815$$

Appendix C

IAST Ratios Used in the Study

Instrument for the Analysis of Science Teaching Ratios

Ratio	V.2	Base
Indirect/Direct	$\frac{1\text{-}4C}{5P\text{-}7}$	$\frac{1\text{-}4}{5\text{-}7}$
Revised Indirect/Direct	$\frac{1\text{-}3S}{5P+5M+7}$	$\frac{1\text{-}3}{5+7}$
Teacher/Student Talk	$\frac{1\text{-}7}{9C\text{-}10PO}$	$\frac{1\text{-}7}{9+10}$
Flexibility	$\frac{\text{number of cells with tallies}}{\text{total number of cells}}$	

Appendix D

Teacher Practices Observation Record Items

Student Teacher Observation Expectations

TPOR Differentiation Subscale

						T has all p working at same task at same time.
						T has different p working at different tasks.
						T holds all p responsible for certain material to be learned.
						T has p work independently on what concerns p.
						T evaluates work of all p by a set standard.
						T evaluates work of different p by different standards.

Name ______________________________

Student Teacher Observation Expectations

The following information will provide your supervisor with a guide as she observes you teaching. It will also aid her in providing feedback during your conference with her following her observation. You will be observed for 30 minutes. Please complete the form prior to teaching the lesson and hand to your supervisor before you teach. Use the back of this sheet if more space is needed.

1. Briefly describe the content of the lesson (ex. introduction to metric system).
2. Describe the main instructional format of the lesson (lecture, discussion, individualized instruction, lab, etc.).
3. Briefly describe the manner in which you plan to gain student interest at the beginning of the lesson (set induction).
4. What specific teaching skills, e.g., probing questions, wait time, reinforcement, etc., do you plan to use during the lesson?
5. Approximately what percent of the lesson do you expect to be teacher talk?
6. Approximately what percent of the lesson do you expect to be student talk?
7. Approximately what percent of the lesson do you expect to be student-student verbal interaction?

Post-lesson Observations

Complete after your presentation and feedback session.

1. If I could do this lesson again, I would change:

Appendix E

Suggested Self-Directed Activities

Suggested Guidelines for Unit Plan

Observation Checklist

Student Teaching Evaluation Report

University Supervisor's Final Evaluation

List of Seminars

Suggested Self-Directed Activities:
16 week student teachers
*Required of all 16 week student teachers
select additional activities (Total of 10 self-directed activities required)

(You may design other activities to count as self-directed activities, with permission from your supervisor. Discuss plans with your supervisor.)

Write-up of each self-directed activity is to be submitted and discussed with your supervisor as each are completed.

1. Spend ½ day with Music, Art or P.E. Consultant in your building. Schedule with Consultant.
2. Spend ½ day with teacher of specialized area: i.e., remedial reading, counselor, speech consultant, librarian, etc.
3. Interview member of auxiliary personnel: i.e. school nurse, para-professional, etc.

*4. Assume the responsibility for planning and teaching at grade level other than that assigned: i.e., teach reading group to another grade level for at least one week, or teach a unit of study in a subject area of your choice at another grade level. Arrange with your teacher, principal, and teacher of classroom in which you will be working.

5. Observe in school settings other than that to which assigned: i.e., open concept, inner city, self contained, private school, pre-school, junior high, senior high, and programs which may be different from your classroom in specific areas of the curriculum such as reading. Your supervisor will help you determine needs. Schedule through supervisor and your building principal. Out of town observations should be scheduled through Mrs. Wyatt.
6. Attend Board of Education Meeting.
7. Attend meeting of any planning committee: Lawrence Education Association, Parent Advisory Board, Committee for Alternative Education, etc.
8. Interview: (Select one) Homebound Teacher - Teacher of Handicapped Children (Schedule through Principal)
9. Plan and teach a comprehensive unit. Thematic in nature, which correlated subject areas. (Your supervisor will discuss expectations with you)
10. Participate in professional meeting on a regional or state level.
11. Participate in curriculum meetings scheduled outside your school. (workshops for teacher, etc.)
12. Visit a Teacher Exchange such as the Learning Exchange. Kansas City.
13. Develop and maintain a record for evaluating student progress. i.e., specific reading group, or math group, etc.
14. Plan, conduct and follow-up a field trip with your students, appropriate to topics of study in your classroom.
15. Conduct a child study of one child in your classroom for a 10 week period. (Discuss this with your supervisor.)

Suggested Guidelines for Unit Plan

I. Over-all Goals of Unit

II. Specific objectives (What students will learn, what you hope to accomplish through the unit)

III. *Learning Activities (Description of each activity and materials needed)

This might include, for example:

- Small group activities
- Large group activities
- Independent activities
- Learning center
- Field trip
- Resource persons
- Teaching aids: Bulletin boards, films, games

*Try to correlate as many subject areas as you can. This will depend on appropriateness and your teaching situation.

IV. Evaluation of Objectives: your plan for evaluating whether your objectives were accomplished

V. Teacher Resources Used

VI. Critique of Unit (After unit is taught)

What would you change if you were teaching this unit again?
What activities went especially well--why?

NOTE:

These are suggested guidelines. You should talk over your unit plan with your supervisor before it is introduced in your classroom for suggestions.

Name ____________________________

Supervisor ____________________________

Observation Check List:

1. Observe and write a positive comment about each child with whom you will be working during student teaching. (This may help you select a child for your child study.)

2. Observe and list the classroom teacher's non-teaching duties.

3. Observe and note classroom structure:
   daily schedule   flexibility   learning atmosphere

4. Observe and record how teacher meets individual needs. (Expectations of students).

5. Observe methods used in teaching in subject area.
   Note:
   Lesson plan, objectives, materials used, motivation, teaching-learning aids used, length of lesson, evaluation, plans for follow up.

   Teacher-pupil interaction.   Peer interaction

   Classroom Management: Hows does teacher handle problems which arise?

*Note any special plans you wish to carry out sometime during the semester as a result of your observations.

1.

My students:	Positive comment

2.

Classroom teachers non-teaching duties:

3.

My observations of classroom structure:

4.

Note: How teacher meets individual needs. Note too, your feelings about realistic expectations of your students. i.e.: are you surprised at what children can do? or did you expect more from this age level?

5.

Observation of teaching methods: (Select one subject area for this report). Comment about lesson plans, objectives, materials used, motivation, teaching-learning aids, length of lesson, evaluation, plans for follow-up.

5. cont.

Observation of teaching methods cont.

Teacher-pupil interaction

Peer Interaction

Classroom Management (How does teacher handle problems which arise?)

*Special plans for semester -- record on page 1.

STUDENT TEACHING EVALUATION REPORT

Student Teacher ____________________ Date ______________ Time arrived _________

Cooperating Teacher ____________________ Time left _________

School ______________ Level or Area ________ University Super. ____________________

	Good	Aver-age	Poor	Comments
Content: Mastery of Material				
Preparation				
Ability to express thoughts				
Use of English				
Organization: purpose, sequence of ideas, etc.				
Satisfy questioners by answers				
Use of class time: material included—amount and type				
Relation of subject matter to other areas (previous knowledge, contemporary scene)				
Techniques: **Delivery:** Voice: clearness, inflection, enthusiasm				
Rapport with class				
Poised and enthusiastic				
Posture				
Methods: Presentation: Inductive and descriptive (student-centered?)				
Teaching of other skills simultaneously (e.g. listening, speaking)				
Class participation (use of students' ideas)				
Discipline				
Use of instructional media: textbooks, blackboard, audio-visual				
Use of teaching skills: reinforcement, varying stimulus, inquiry, etc.				

General Comments:

THE UNIVERSITY OF KANSAS

EDUCATIONAL PLACEMENT BUREAU
Lawrence, Kansas 66045
REFERENCE

223 CARRUTH-O'LEARY HALL

99

1. I wish to have access to this statement and understand that under Public Law 93-380 I shall have the right to read this document.

Signature .... Date ....

2. I wish this statement to be confidential, and I hereby waive any and all rights of access granted me by Public Law 93-380 to this document.

Signature .... Date ....

Candidate's name ....

RATING SCALE

	Excellent	Very Good	Good	Poor	No opportunity to observe
FAITHFULNESS IN DUTIES—Reliable, responsible					
COOPERATION WITH COLLEAGUES					
PERSONAL APPEARANCE—Pleasing, attractive, appropriate dress					
LEADERSHIP—Independent, forceful, innovative					
ABILITY TO COMMUNICATE					
ABILITY TO ORGANIZE AND APPLY SUBJECT MATTER					
ABILITY TO MAINTAIN DISCIPLINE					
SKILL IN SECURING EFFECTIVE LEARNER RESPONSES					
SKILL IN UTILIZING SOUND PRINCIPLES OF TEACHING					
ENTHUSIASM AND ENERGY EXHIBITED					
PROBABLE SUCCESS AS A BEGINNING TEACHER					

Of all the student teachers I have ever supervised, I would place this student in the

☐ Top 25 percent ☐ Second 25 percent ☐ Third 25 percent ☐ Bottom 25 percent

IMPORTANT NOTE: The above ratings and statements are made with a *student teacher* in mind.

Name of Supervisor .... Supervisor of ....

Subject(s) and/or grade(s)

Period of Student Teaching .... School ....

Date .... Town ....

UNIVERSITY SUPERVISOR'S REPORT ABOUT STUDENT TEACHING

THE UNIVERSITY OF KANSAS
LAWRENCE, KANSAS

List of Seminars

*Note: Times and places are yet to be determined.

1. Outdoor Education
2. Remedial Reading
3. Creative Movement Education
4. Media Equipment Practice
5. Broken Arrow's Program for the Gifted
6. How a Community Organization Works with Children
7. Mathematics: Minus-Plus
8. Humanizing Education
9. The Special Problems of Some Children
10. What Children Choose to Read
11. The Pinckney Project
12. Indian Students in Your Classroom
13. Classroom Management

Appendix F

Chi-Square Test of Independence for Supervisors in the Experimental and Comparison Groups

Chi-Square Test of Independence for Supervisors in the Experimental and Comparison Groups

Observed

Category	Experimental	Comparison	Sum
Initiating	740	113	853
Eliciting	57	53	110
Valuing	25	241	296
			Σ =1259

Expected

Category	Experimental	Comparison
Initiating	570.5175	282.4825
Eliciting	73.5720	36.4280
Valuing	177.9100	88.0890

Chi-Square Test of Independence formula:

$$X^2 = \frac{(f_o - f_e)^2}{f_e}$$

f_o = observed frequency

f_e = expected frequency = $\frac{\text{row sum x column sum}}{\text{grand sum}}$

$$X^2 = \frac{(740-570.5175)^2}{570.5175} + \frac{(57-73.5720)^2}{73.5720} + \frac{(25-177.9100)^2}{177.9100} +$$

$$\frac{(113-282.4825)^2}{282.4825} + \frac{(53-36.4280)^2}{36.4280} + \frac{(241-88.0890)^2}{88.0890} = 560.1615$$

The critical X^2 value with 2 degrees of freedom = 9.21. Therefore, the null hypothesis of no difference between the frequency distributions of the two groups is rejected.

Appendix G

Stages of Concern Questionnaire

Teacher Attitudes Questionnaire

Preparation Adequacy Inventory

Concerns Questionnaire

Name (Optional) ____

It is very important for continuity in processing this data that we have a unique number that you can remember. Please use:

Last 4 digits SS# ___ ___ ___ ___

The purpose of this questionnaire is to determine what people who are using or thinking about using innovations are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various innovations to many years experience in using them. Therefore, a good part of the items may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle "0" on the scale, according to the explanation at the top of each of the following pages.

For example:

0 1 2 3 4 5 6 [✓ 7]	This statement is very true of me at this time.
0 1 2 3 [✓ 4] 5 6 7	This statement is somewhat true of me now.
0 [✓ 1] 2 3 4 5 6 7	This statement is not at all true of me at this time.
[✓ 0] 1 2 3 4 5 6 7	This statement seems irrelevant to me.

Please respond to the items in terms of your present concerns, or how you feel about your involvement or potential involvement with the Student Teaching Program. We do not hold to any one definition of this innovation, so please think of it in terms of your own perceptions of what it involves. Since this questionnaire is used for a variety of innovations the name Student Teaching Program never appears. Please note that phrases such as "the innovation," "this approach," and "the new system" all refer to the use of the Student Teaching Program. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the Student Teaching Program.

Thank you for taking time to complete this task.

Copyright, 1974
Procedures for Adopting Educational Innovations/CBAM Project
R&D Center for Teacher Education, The University of Texas at Austin

0 1 2 3 4 5 6 7

Not true of me now   Somewhat true of me now   Very true of me now

0 1 2 3 4 5 6 7 I am concerned about students' attitudes toward this innovation.

0 1 2 3 4 5 6 7 I now know of some other approaches that might work better.

0 1 2 3 4 5 6 7 I don't even know what the innovation is.

0 1 2 3 4 5 6 7 I am concerned about not having enough time to organize myself each day.

0 1 2 3 4 5 6 7 I would like to help other faculty in their use of the innovation.

0 1 2 3 4 5 6 7 I have a very limited knowledge about the innovation.

0 1 2 3 4 5 6 7 I would like to know the effect of reorganization on my professional status.

0 1 2 3 4 5 6 7 I am concerned about conflict between my interests and my responsibilities.

0 1 2 3 4 5 6 7 I am concerned about revising my use of the innovation.

0 1 2 3 4 5 6 7 I would like to develop working relationships with both our faculty and outside faculty using this innovation.

0 1 2 3 4 5 6 7 I am concerned about how the innovation affects students.

0 1 2 3 4 5 6 7 I am not concerned about this innovation.

0 1 2 3 4 5 6 7 I would like to know who will make the decisions in the new system.

0 1 2 3 4 5 6 7 I would like to discuss the possibility of using the innovation.

0 1 2 3 4 5 6 7 I would like to know what resources are available if we decide to adopt this innovation.

0 1 2 3 4 5 6 7 I am concerned about my inability to manage all the innovation requires.

0 1 2 3 4 5 6 7 I would like to know how my teaching or administration is supposed to change.

0 1 2 3 4 5 6 7 I would like to familiarize other departments or persons with the progress of this new approach.

0 1 2 3 4 5 6 7

Not true of me now — Somewhat true of me now — Very true of me now

0 1 2 3 4 5 6 7 I am concerned about evaluating my impact on students.

0 1 2 3 4 5 6 7 I would like to revise the innovation's instructional approach.

0 1 2 3 4 5 6 7 I am completely occupied with other things.

0 1 2 3 4 5 6 7 I would like to modify our use of the innovation based on the experiences of the students.

0 1 2 3 4 5 6 7 Although I don't know about this innovation, I am concerned about things in the area.

0 1 2 3 4 5 6 7 I would like to excite my students about their part in this approach.

0 1 2 3 4 5 6 7 I am concerned about time spent working with non-academic problems related to this innovation.

0 1 2 3 4 5 6 7 I would like to know what the use of the innovation will require in the immediate future.

0 1 2 3 4 5 6 7 I would like to coordinate my effort with others to maximize the innovation's effects.

0 1 2 3 4 5 6 7 I would like to have more information on time and energy commitments required by this innovation.

0 1 2 3 4 5 6 7 I would like to know what other faculty are doing in this area.

0 1 2 3 4 5 6 7 At this time, I am not interested in learning about this innovation.

0 1 2 3 4 5 6 7 I would like to determine how to supplement, enhance or replace the innovation.

0 1 2 3 4 5 6 7 I would like to use feedback from students to change the program.

0 1 2 3 4 5 6 7 I would like to know how my role will change when I am using the innovation.

0 1 2 3 4 5 6 7 Coordination of tasks and people is taking too much of my time.

0 1 2 3 4 5 6 7 I would like to know how this innovation is better than what we have now.

Cppywrite, 1974
Procedures for Adopting Educational Innovations/CBAM Project
R&D Center for Teacher Education, The University of Texas at Austin

TEACHER ATTITUDES QUESTIONNAIRE

INSTRUCTIONS: FOR EACH OF THE FOLLOWING STATEMENTS, CIRCLE THE LETTER WHICH BEST INDICATES THE EXTENT TO WHICH YOU AGREE WITH THE STATEMENT ACCORDING TO YOUR OWN PERSONAL PHILOSOPHY OF EDUCATION.

A. PHILOSOPHY

	Completely Agree	Mildly Agree	Agree As Much As Disagree	Mildly Disagree	Completely Disagree
1. Academic instruction should be the top priority in any educational program.	A	B	C	D	E
2. Noisy classrooms interfere with learning.	A	B	C	D	E
3. Competition is important in schools to prepare students for the real world	A	B	C	D	E
4. The absence of personally meaningful experiences in school is the major contributor to student dissatisfaction.	A	B	C	D	E
5. Students should be given a solid foundation in basic skills and fundamental facts and principles before pursuing problems on their own	A	B	C	D	E
6. The development of a positive self-concept should be the primary goal of a school	A	B	C	D	E
7. Learning activities should be organized around life experiences rather than around subject areas.	A	B	C	D	E
8. Most students cannot assume the responsibility for their own learning. They need set assignments, limits, direction, and control.	A	B	C	D	E
9. Teachers should express their feelings openly to students.	A	B	C	D	E
10. It is more important for a student to learn how to approach and solve a problem than it is for him to master the subject matter.	A	B	C	D	E
11. A student's attitudes and self-concept are largely the result of his home environment and cannot be changed to any extent in school	A	B	C	D	E

	Completely Agree	Mildly Agree	Agree As Much As Disagree	Mildly Disagree	Completely Disagree
12. The main purpose of education should be to help each student develop his own abilities and identify his own interests and goals in life.	A	B	C	D	E
13. Most of the problems in today's schools are the result of lack of control and discipline by teachers and principals.	A	B	C	D	E

Preparation Adequacy Inventory

Directions

The following have been identified as relevant and useful skills and concepts for pre-service teachers to be familiar with. Please rate each item as you perceive it now as being useful in your teacher training program.

Circle the appropriate rating for each item with a rating of 1 being not useful and a rating of 5 being useful. If you are not familiar with the item, circle the 0 rating.

Example:

Student teaching	0	1	2	3	4	[✓ 5]
		not useful				useful

The individual felt that student teaching was useful in his/her preparation for becoming a teacher and circled 5 accordingly.

Preparation Adequacy Inventory - Page 1

Circle the appropriate rating:	0	1 not useful	2	3	4	5 useful
1. Constructing lesson plans.	0	1	2	3	4	5
2. Writing behavioral objectives	0	1	2	3	4	5
3. Building tests	0	1	2	3	4	5
4. Asking questions.	0	1	2	3	4	5
5. Wait time I and II.	0	1	2	3	4	5
6. Set induction.	0	1	2	3	4	5
7. Reinforcement.	0	1	2	3	4	5
8. Closure.	0	1	2	3	4	5
9. Microteaching.	0	1	2	3	4	5
10. Different methods of evaluation.	0	1	2	3	4	5
11. Different grading procedures.	0	1	2	3	4	5
12. Experience as a student intern working with children.	0	1	2	3	4	5
13. Team teaching.	0	1	2	3	4	5
14. Developing learning centers	0	1	2	3	4	5
15. Parent conferences.	0	1	2	3	4	5
16. Education literature, e.g., ERIC, journals, etc.	0	1	2	3	4	5
17. Content area preparation	0	1	2	3	4	5
18. Curriculum innovations, e.g., SCIS, learning packages, IGE, etc	0	1	2	3	4	5
19. Alternatives to traditional education.	0	1	2	3	4	5
20. Hands-on experiences.	0	1	2	3	4	5
21. The metric system.	0	1	2	3	4	5
22. Use of standardized tests.	0	1	2	3	4	5

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Circle the appropriate rating:	0	1 not useful	2	3	4	5 useful
23. Piaget's stages of development.	0	1	2	3	4	5
24. Discipline in the classroom.	0	1	2	3	4	5
25. Games and simulations.	0	1	2	3	4	5
26. Role playing.	0	1	2	3	4	5
27. Assessing learning and/or emotional problems.	0	1	2	3	4	5
28. Small group work.	0	1	2	3	4	5
29. Individualized instruction.	0	1	2	3	4	5
30. Independent study.	0	1	2	3	4	5
31. Your overall preparation.	0	1	2	3	4	5
32. Teacher observation systems.	0	1	2	3	4	5
33. Public relations/human relations concepts.	0	1	2	3	4	5

Identify other areas you found useful and/or not useful:

Appendix H

The Mann Whitney U Test

The Mann Whitney U Test

The Mann Whitney U Test formula:

$$U_1 = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1$$

or, equivalently:

$$U_2 = n_1 n_2 + \frac{n_2(n_2+1)}{2} - R_2$$

n_1 = number of cases in the smaller independent sample.
n_2 = number of cases in the larger independent sample.
R_1 = sum of the ranks assigned to the group with sample size n_1.
R_2 = sum of the ranks assigned to the group with sample size n_2.
Tied ranks = midpoint between tied ranks.

An example of computing U:

Primary Stage of Concern	Rank	Intermediate Stage of Concern	Rank
0	1	0	1.5
1	2.5	2	5
2	4.5	1	3.5
2	4.5	1	3.5
1	2.5	3	6
3	6.5	0	1.5
4	8	4	7
6	9	5	8
3	6.5		

$$U_1 = (8)(9) + \frac{8(8+1)}{2} - 36 = 72$$

$$U_2 = (8)(9) + \frac{9(9+1)}{2} - 45 = 72$$

Siegel (1956) states that the smaller U is the one needed. In this example they are equal. The critical U value at p less than .05 is 15. Therefore, the hypothesis of no difference between the groups is rejected.

Appendix I

The Wilcoxon Matched Pairs Signed-Ranks Test

The Wilcoxon Matched Pairs Signed-Ranks Test

The Wilcoxon Test is used for dependent samples to test for differences between ranked scores. The Wilcoxon T = the smaller of liked signed ranks. That is, T is either the sum of the positive ranks or the sum of the negative ranks, whichever is smaller.

An example:

Pretreatment to posttreatment data for primary student teachers.

Pre	Post	Difference	Rank	Rank with less frequent sign
1	4	+3	+9	
4	2	-2	-6	-6
0	2	+2	+6	
0	1	+1	+2.5	
2	0	-2	-6	-6
2	6	+4	+11.5	
3	0	-3	-9	-9
1	2	+1	+2.5	
2	3	+1	+2.5	
0	1	+1	+2.5	
1	4	+3	+9	
2	6	+4	+11.5	
				T=21

Siegel (1956) states that in this test the critical T value should exceed the obtained T value for rejection of the null hypothesis. In this case the critical value at p less than .05 is 14. The null hypothesis is accepted.

Appendix J

Subscale Scores and Percentile Ranks on *Stages of Concern Questionnaire*

Pre and Post Scores on MANOVA Dependent Variables

Raw and Percentile Pre and Post SoC
Scores for the Experimental Group

Participant			Subscale						
	1	2	3	4	5	6	7	Total	
1Pre	17	21	22	22	16	12	5	115	Totals
1	95	75	78	83	19	19	9	63	Percentile
1Post	13	10	16	16	21	7	17	100	Totals
1	89	43	59	60	33	9	52	45	Percentile
2Pre	15	20	18	15	25	25	19	137	Totals
2	93	72	67	56	54	68	60	80	Percentile
2Post	11	23	31	13	29	27	24	158	Totals
2	84	84	95	47	71	76	81	92	Percentile
3Pre	13	29	26	19	31	27	18	163	Totals
3	89	96	87	73	82	76	57	95	Percentile
3Post	12	17	15	8	32	28	17	129	Totals
3	86	63	57	27	86	80	52	74	Percentile
4Pre	5	21	20	14	30	17	12	119	Totals
4	53	75	72	52	76	36	30	66	Percentile
4Post	8	8	23	12	25	22	12	110	Totals
4	72	37	80	43	54	55	30	54	Percentile
5Pre	19	18	24	17	22	19	14	133	Totals
5	97	66	83	65	38	44	38	77	Percentile
5Post	1	19	21	17	27	18	13	116	Totals
5	23	69	76	65	63	40	34	63	Percentile
6Pre	11	9	15	9	17	11	2	74	Totals
6	84	40	57	30	21	16	3	18	Percentile
6Post	3	25	26	8	29	3	22	116	Totals
6	37	90	87	27	71	3	73	63	Percentile
7Pre	7	32	33	28	30	27	26	183	Totals
7	66	99	96	95	76	76	87	98	Percentile
7Post	9	28	35	18	28	28	22	168	Totals
7	77	95	99	69	66	80	73	95	Percentile
8Pre	16	19	22	18	26	22	11	134	Totals
8	94	69	78	69	59	55	26	77	Percentile
8Post	5	7	11	5	31	20	15	94	Totals
8	53	34	45	15	82	48	42	39	Percentile
9Pre	9	16	21	19	14	9	16	104	Totals
9	77	60	76	73	13	12	47	48	Percentile
9Post	13	22	15	7	18	20	19	114	Totals
9	89	80	57	23	24	48	60	60	Percentile
10Pre	6	15	17	11	18	15	13	95	Totals
10	60	57	63	39	24	28	34	39	Percentile
10Post	18	24	26	21	23	24	22	158	Totals
10	96	88	87	80	43	64	73	92	Percentile
11Pre	8	25	28	16	29	27	23	156	Totals
11	72	90	91	60	71	76	77	89	Percentile
11Post	5	12	12	8	18	22	18	95	Totals
11	53	48	48	27	24	55	57	39	Percentile
12Pre	9	13	17	11	18	9	11	88	Totals

Raw and Percentile Pre and Post SoC
Scores for the Experimental Group (cont'd.)

Participant	Subscale								
	1	2	3	4	5	6	7	Total	
12	77	51	63	39	24	12	26	33	Percentile
12Post	16	13	17	12	21	17	15	111	Totals
12	94	51	63	43	33	36	42	57	Percentile
13Pre	10	23	25	25	31	22	15	151	Totals
13	81	84	85	90	82	55	42	89	Percentile
13Post	15	17	12	24	24	13	24	129	Totals
13	93	63	48	88	48	22	81	74	Percentile
14Pre	13	16	25	22	19	15	13	123	Totals
14	89	60	85	83	27	28	34	69	Percentile
14Post	6	13	18	10	29	21	16	113	Totals
14	60	51	67	34	71	52	47	60	Percentile
15Pre	13	24	28	24	16	20	2	127	Totals
15	89	88	91	88	19	48	3	71	Percentile
15Post	0	14	32	26	29	25	21	147	Totals
15	10	54	96	92	71	68	69	86	Percentile
16Pre	8	22	22	12	16	19	9	108	Totals
16	72	80	78	43	19	44	20	54	Percentile
16Post	0	18	28	15	33	31	13	138	Totals
16	10	66	91	56	90	91	34	80	Percentile
17Pre	17	12	7	7	20	5	8	76	Totals
17	95	48	31	23	30	5	17	21	Percentile
17Post	13	11	15	8	22	11	10	90	Totals
17	89	45	57	27	38	16	22	36	Percentile
18Pre	11	13	23	14	21	24	11	117	Totals
18	84	51	80	52	22	64	26	63	Percentile

Raw and Percentile Pre and Post SoC
Scores for the Comparison Group

Participant	Subscale								
	1	2	3	4	5	6	7	Total	
1Pre	21	22	15	23	16	3	7	107	Totals
1	98	80	57	85	19	3	14	51	Percentile
1Post	15	19	14	23	11	8	11	101	Totals
1	93	69	55	85	8	10	26	45	Percentile
2Pre	5	22	16	13	29	16	5	106	Totals
2	53	80	59	47	71	31	9	51	Percentile
2Post	5	13	23	6	33	21	8	109	Totals
2	53	51	80	18	90	52	17	54	Percentile
3Pre	14	14	16	16	20	17	18	115	Totals
3	91	54	59	60	30	36	57	63	Percentile
3Post	9	22	25	18	30	26	26	156	Totals
3	77	80	85	69	76	72	87	89	Percentile
4Pre	6	16	18	33	26	27	6	132	Totals
4	60	60	67	99	59	76	11	74	Percentile
4Post	17	10	16	10	17	17	7	92	Totals
4	95	43	59	34	21	28	14	36	Percentile
5Pre	22	27	20	15	30	26	25	165	Totals
5	99	93	72	56	76	72	84	95	Percentile
5Post	13	18	19	14	24	21	16	125	Totals
5	89	66	70	52	49	52	47	69	Percentile
6Pre	21	24	24	14	23	19	15	140	Totals
6	98	88	83	52	43	44	42	80	Percentile
6Post	9	12	20	4	18	14	11	88	Totals
6	77	48	72	11	24	25	26	33	Percentile
7Pre	17	26	26	13	30	18	13	143	Totals
7	95	91	87	47	76	40	34	83	Percentile
7Post	27	27	32	21	35	22	19	183	Totals
7	99	93	96	80	96	55	60	98	Percentile
8Pre	10	14	26	15	29	16	15	125	Totals
8	81	54	87	56	71	31	42	69	Percentile
8Post	11	19	29	26	31	24	24	164	Totals
8	84	69	92	92	82	64	81	95	Percentile
9Pre	10	19	28	25	31	21	15	149	Totals
9	81	69	91	90	82	52	42	86	Percentile
9Post	7	13	16	22	27	22	22	129	Totals
9	66	51	59	83	63	55	73	74	Percentile
10Pre	5	15	23	13	24	22	17	119	Totals
10	53	57	80	47	48	55	52	66	Percentile
10Post	6	20	24	12	26	22	27	137	Totals
10	60	72	83	43	59	55	90	80	Percentile
11Pre	22	30	28	17	28	34	10	169	Totals
11	99	97	91	65	66	97	22	95	Percentile
11Post	9	29	31	19	34	33	29	184	Totals
11	77	96	95	73	92	95	94	98	Percentile
12Pre	13	25	26	23	24	13	18	142	Totals
12	89	90	87	85	48	22	57	83	Percentile

Raw and Percentile Pre and Post SoC
Scores for the Comparison Group (cont'd.)

Participant	Subscale								
	1	2	3	4	5	6	7	Total	
12Post	11	25	25	26	25	22	25	159	Totals
12	84	90	85	92	54	55	84	92	Percentile
13Pre	17	31	29	20	26	25	20	168	Totals
13	95	98	92	77	59	68	65	95	Percentile
13Post	15	29	33	17	35	26	29	184	Totals
13	93	96	96	65	96	72	94	98	Percentile
14Pre	17	15	17	29	15	15	8	116	Totals
14	95	57	63	97	16	28	17	63	Percentile
14Post	17	19	22	28	16	14	16	132	Totals
14	95	69	78	95	19	25	47	74	Percentile
15Pre	16	20	24	18	19	22	13	132	Totals
15	94	72	83	69	27	55	34	74	Percentile
15Post	18	20	21	20	20	22	20	141	Totals
15	96	72	76	77	30	55	65	80	Percentile

Pre and Post Scores on MANOVA Dependent Variables (Experimental)

	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Primary	I/D	I/D	i/d	i/d	T/S	T/S	Flex	Flex	TAQ	TAQ	PAI	PAI
1	.79	1.05	.52	.52	1.44	1.78	10.8	10.0	43	44	137	140
2	1.39	1.56	1.14	6.0	.65	.50	9.7	7.7	46	42	121	133
3	.71	1.09	.52	1.08	3.06	.82	8.59	10.1	41	45	52	125
4	.78	2.00	.25	.73	.77	.62	13.9	9.10	35	43	147	140
5	.79	.89	2.53	1.31	2.85	6.26	7.98	12.5	41	40	128	141
6	1.55	2.03	.39	1.16	1.43	1.39	8.29	7.07	44	47	126	140
7	.68	.52	1.24	2.43	8.19	6.68	9.60	10.1	47	47	97	77
8	2.41	1.33	1.50	.97	2.10	3.45	6.47	7.78	47	45	121	133
9	4.43	1.24	2.38	5.20	2.03	3.21	7.07	4.44	45	49	144	143
10	1.05	1.06	.43	1.18	1.19	1.51	9.50	8.29	39	42	125	151
11	.42	2.90	.28	3.33	3.03	1.36	7.48	6.37	49	50	159	164
Intermediate												
1	.58	.64	.52	2.22	3.60	2.07	8.89	10.8	43	50	101	132
2	.43	.27	.30	.15	1.97	1.58	5.96	11.6	52	49	131	153
3	.66	.58	.75	.73	3.48	3.69	8.99	11.3	48	47	106	116
4	1.66	1.94	.66	1.93	.96	1.16	9.89	7.88	43	48	135	135
5	1.20	.83	5.80	3.09	3.00	1.44	7.48	7.12	48	42	140	147
6	.34	.17	.05	.20	8.75	6.79	4.04	8.19	48	48	146	145
7	.88	1.28	.74	1.17	8.09	1.46	6.87	6.06	43	52	112	126

Pre and Post Scores on MANOVA Dependent Variables (Comparison)

Primary	Pre I/D	Post I/D	Pre i/d	Post i/d	Pre T/S	Post T/S	Pre Flex	Post Flex	Pre TAQ	Post TAQ	Pre PAI	Post PAI
1	.33	.13	.60	1.33	4.08	6.82	7.78	5.06	41	38	143	139
2	.58	.73	2.50	.58	6.21	3.80	6.17	6.98	46	51	150	158
3	.26	.11	.12	.62	5.35	12.0	9.20	6.17	46	44	123	132
4	1.33	1.04	6.00	1.17	1.18	.15	4.85	4.65	39	49	127	126
5	2.23	4.05	1.13	2.43	.77	1.20	7.79	7.26	40	45	131	143
6	1.01	.49	.56	.38	3.69	1.39	10.8	9.40	44	45	82	137
7	1.08	.98	2.17	3.86	1.54	4.14	7.68	8.69	47	47	157	165
8	.16	.25	.05	.02	22.8	15.0	8.79	4.34	44	47	114	135
Intermediate												
1	1.09	1.41	1.50	46.0	1.93	.87	5.46	4.24	38	43	156	78
2	.34	.48	2.86	.67	6.28	4.88	5.91	5.95	51	49	130	137
3	.59	.39	.73	1.56	4.16	4.47	4.95	8.09	42	47	108	107
4	.59	.31	.133	1.08	3.71	5.00	8.89	3.74	52	48	137	142
5	.50	.48	.65	14.5	2.79	3.48	7.89	6.27	43	49	135	142
6	2.28	.81	.82	3.00	2.98	2.42	9.20	6.47	43	51	129	135
7	.19	.86	.53	7.67	2.83	1.75	7.17	5.36	41	40	101	88